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MARKETING THE LATE CROP OF POTATOES

By

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By J. W. Park, *agricultural economist, Division of Fruits and Vegetables, Bureau of Agricultural Economics* [1]

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RECENT DEVELOPMENTS IN MARKETING LATE-CROP POTATOES

Notable developments have occurred in the marketing of late-crop potatoes during recent years. There has been a greater use of brushing and washing machines in cleaning potatoes for market and more of the small consumer-size bags have been used, although both the quantity packed in small bags and the quantity cleaned by brushing or washing are still relatively small for the late crop as a whole. Carlot shipments of potatoes in bulk have declined. A tendency to

[1] Some material used in this bulletin is from Farmers' Bulletin No. 1578, Marketing Late-Crop Potatoes. Statistics from the various divisions of the Bureau have been used. Acknowledgment is made of assistance from the following field representatives of the Bureau who have contributed information relating to producing areas and city markets: W. F. Allewelt, T. W. Ayres, F. E. Bailey, E. R. Biddle, J. K. Boyd, T. R. Butts, Wendell Calhoun, Geo. W. Christenson, R. E. Corbin, W. F. Cox, J. E. Dickerson, H. H. Duncan, A. B. Farlinger, Leonard S. Fenn, R. M. Ferguson, M. C. Gregory, C. J. Hansen, W. E. Harrison, W. D. Hull, J. C. Keller, R. E. Keller, Walter Kingsbury, A. M. McDowell, H. F. McFeely, E. F. McKune, Bryce Morris, W. H. Mosier, V. H. Nicholson, R. G. Risser, Melvin A. Russell, C. D. Schoolcraft, L. G. Schultz, A. Stambaugh, H. S. Stiles, R. L. Sutton, and G. Ray Warren.

emphasize careful handling as a means of obtaining a better pack by preventing unnecessary bruising and mechanical injury is noted. Stricter enforcement of laws relating to misbranding as to grade and description of pack is evident and the number of State laws relating to marking containers and grading has increased. Greater use has been made of Federal-State inspection service. An increase in the use of the motortruck has brought changes in methods of potato marketing. A potato futures market has been inaugurated. A greatly increased production of potatoes in south-central California is now marketed in competition with some of the late-crop stock carried over to the spring and early summer and there was an increase in average production in 1932–36 in Maine and Idaho, and a decrease in the mid-western surplus States as compared with 1922–26. These developments are here considered in relation to the marketing of the late crop of potatoes.

LATE-CROP POTATO REGION

Late- or main-crop potatoes are mostly harvested in September and October and are marketed during the fall, winter, spring, and early summer. This is in contrast to the early and intermediate crops, which are marketed as soon as they are dug, mostly from April to August. Thirty States, extending from Maine to California, are classed as late-crop producing States. In general, these States lie north or west of the group that produces early- and intermediate-crop potatoes (fig. 1). These late-crop States are further grouped into 18 so-called surplus-producing States which include the areas of greatest commercial production, and 12 other late-crop States, most of which are important potato-consuming States. The 18 surplus States are for convenience grouped into 3 Eastern, 5 Central, and 10 Western States (table 1).

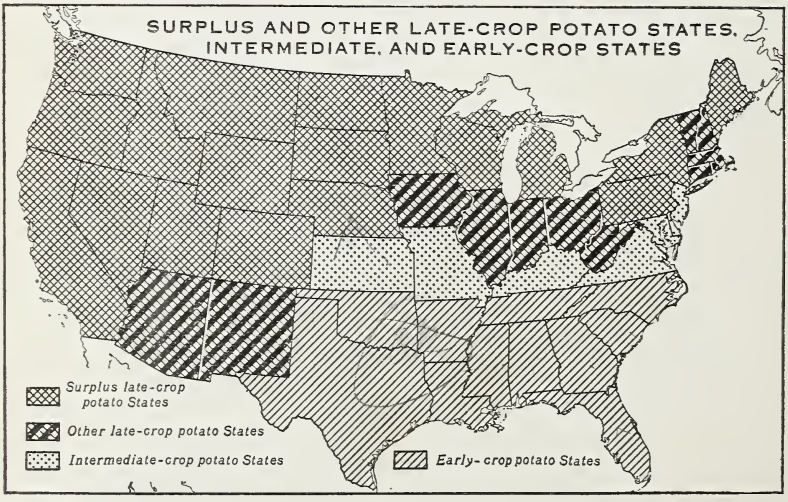
SURPLUS AND OTHER LATE-CROP POTATO STATES, INTERMEDIATE, AND EARLY-CROP STATES
Surplus late-crop potato States
Other late-crop potato States
Intermediate-crop potato States
Early-crop potato States
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FIGURE 1.—Eighteen so-called surplus late-potato States are the chief sources of shipments of late-crop potatoes. Twelve other States are also classed as late-potato States.

TABLE 1.—*Production of potatoes in 30 late-crop States and in intermediate and early-crop groups, averages 1922–36, annual 1932–36* [1]

State and group	Average 1922–26	Average 1927–31	Average 1932–36	1932	1933	1934	1935	1936
	1,000 bushels	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*
Surplus late-crop States:								
Maine	33,039	43,208	44,053	40,460	42,000	55,404	38,400	44,000
New York	31,538	26,629	31,009	33,075	29,274	38,467	27,830	26,400
Pennsylvania	22,356	24,389	26,413	23,650	23,843	32,770	25,536	26,268
3 Eastern	86,932	94,226	101,475	97,185	95,117	126,641	91,766	96,668
Michigan	29,500	21,737	28,798	30,264	23,325	36,176	28,101	26,125
Wisconsin	28,316	24,079	23,767	24,621	18,620	31,968	23,534	20,090
Minnesota	35,506	30,400	22,792	29,562	22,035	20,463	29,400	12,502
North Dakota	10,912	8,713	8,592	9,686	9,548	6,210	12,348	5,170
South Dakota	5,310	4,325	2,420	4,556	2,160	1,200	3,400	783
5 Central	109,544	89,254	86,369	98,689	75,688	96,017	96,783	64,670
Nebraska	7,887	9,636	7,642	9,450	9,200	4,750	10,080	4,730
Montana	2,446	2,218	1,840	2,200	2,070	1,794	1,615	1,520
Idaho	13,545	21,993	23,376	22,800	25,530	23,932	22,360	22,260
Wyoming	1,408	2,524	2,036	1,700	3,300	1,204	2,610	1,365
Colorado	12,880	15,321	14,332	12,650	14,700	7,812	18,000	18,500
Utah	1,982	2,010	1,943	2,250	2,100	1,495	2,040	1,830
Nevada	706	583	370	360	322	347	416	406
Washington	8,673	8,733	8,548	8,160	9,360	9,291	7,920	8,010
Oregon	3,770	4,892	6,718	5,760	7,360	7,488	5,670	7,310
California	8,580	8,043	10,275	6,948	8,640	11,040	11,760	12,985
10 Western	61,876	75,953	77,080	72,278	82,582	69,153	82,471	78,916
18 surplus late-crop States	258,352	259,432	264,925	268,152	253,387	291,811	271,020	240,254
Other late-crop States:								
New Hampshire	1,279	1,302	1,534	1,456	1,628	1,772	1,150	1,666
Vermont	2,367	2,204	2,378	2,310	2,098	2,960	2,128	2,392
Massachusetts	1,722	1,439	2,290	2,030	2,442	2,618	1,945	2,415
Rhode Island	288	324	639	480	576	703	718	720
Connecticut	1,756	1,758	2,690	2,360	2,560	3,238	2,455	2,839
5 New England	7,411	7,026	9,532	8,636	9,304	11,291	8,396	10,032
West Virginia	3,429	3,551	2,748	3,145	2,520	3,010	3,145	1,920
Ohio	9,729	10,964	13,790	13,464	10,008	14,700	16,740	14,040
Indiana	4,346	4,886	5,615	6,120	3,752	7,104	6,480	4,617
Illinois	4,916	4,362	3,256	4,860	1,584	3,068	4,100	2,666
Iowa	7,479	6,555	6,097	8,360	5,576	5,796	7,200	3,551
5 Central	29,899	30,320	31,505	35,949	23,440	33,678	37,665	26,794
New Mexico	130	305	425	432	560	265	420	450
Arizona	248	243	189	255	240	130	140	180
2 Southwestern	377	548	614	687	800	395	560	630
12 other late-crop States	37,687	37,894	41,651	45,272	33,544	45,364	46,621	37,456
30 late-crop States	296,039	297,326	306,576	313,424	286,931	337,175	317,641	277,710
7 intermediate-crop States	38,135	40,701	30,990	34,724	26,818	32,279	34,940	26,187
11 early-crop States	23,403	32,732	30,677	28,277	28,557	36,651	33,799	26,100
United States	357,577	370,759	368,243	376,425	342,306	406,105	386,380	329,997

[1] Estimates for each State cover the entire crop, whether commercial or noncommercial, early or late.

Some of the late-crop States produce early- or intermediate- as well as late-crop potatoes, notably California and New York. Some late-crop potatoes are grown in States to the south of the late-crop group.

PRODUCTION, ACREAGE, AND YIELDS

The late crop in the United States usually comprises about 80 to 85 percent of the total potato crop. From 1932 to 1936 production in 30 late-crop States averaged slightly more than 300,000,000 bushels,

or roughly, 2.4 bushels per capita (table 1). Usually about seven-eighths of the late crop is grown in the 18 surplus States. In 1932–36 production in the 3 Eastern surplus States averaged 33 percent of the late crop; in the 5 Central surplus States, 28; in the 10 Western surplus States, 25, and in the 12 other late-crop States, 14 percent.

When late-crop production for the 5 years, 1932–36, is compared with that of the two previous 5-year periods only minor changes are noted for the 30 late-crop States as a whole. The increase from 1922–26 to 1932–36 was only 3.6 percent compared with an increase in the United States population of 11.9 percent. The trend in production during the three 5-year periods was upward in the three Eastern surplus States, particularly in Maine, and in the Western surplus States, especially in Idaho and Oregon. There were downward trends in each of the five Central surplus States. The decrease in Minnesota was pronounced. Among the 12 other late-crop States,

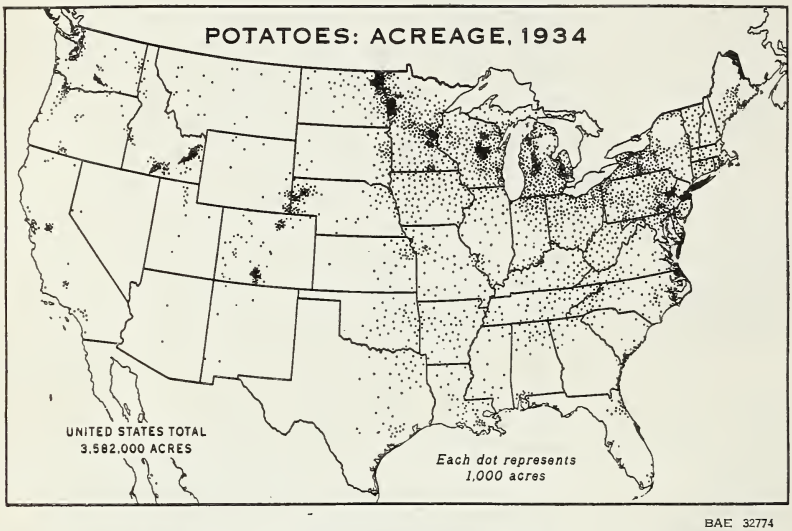


FIGURE 2.—Potatoes are grown in every State, but a large part of the late crop is produced in a number of fairly well-defined areas.

Ohio and Indiana increased their production considerably. There was also some increase in the New England States. On the other hand, production in Illinois, Iowa, and West Virginia decreased somewhat (table 1).

Potato production is widely scattered throughout the United States. The 1935 census shows that in the 18 surplus-producing States, 1,021,000 farms, or 56 percent of the farms in these States, grew potatoes. The average was 2.3 acres per farm. In the other late-crop States 711,000 farms, or 60 percent of the total number in this group, produced potatoes, and the average per farm was slightly less than 0.7 acres. A large part of the late crop, however, is grown in fairly well-defined commercial areas (fig. 2).

Variations in production from year to year are caused by variations in acreage and yield per acre. Acreage planted is influenced by such considerations as the grower's reaction to the price received for one or more preceding crops, cost of seed, and probable profit from other

crops for which the land could be used. The yield per acre is influenced chiefly by weather conditions. Other factors, as cultural practices, variety, and quality of seed also affect yield.

Average acreage in 30 late-crop States for the 10 years, 1927–36, is shown in table 2. Yearly variations from this average ranged from 10 percent below in 1936 to 8 above in 1932 and 1934, and averaged 6.4 percent.

Yield per acre varied from 8 percent below the average in 1933 to 8 above in 1928. The average annual variation for the 10-year period was 3.5 percent.

Production of late-crop potatoes in 1927–36 varied from 11 percent below the average in 1929 to 13 above in 1928, a range of 72,000,000 bushels. The average variation from the 10-year average production was 7.1 percent, or about 21,000,000 bushels (table 2).

TABLE 2.—*Acreage, yield per acre, and production of potatoes and variations from 10-year average, 30 late-crop States, 1927–36*

Year	Acreage	Yield per acre	Production	Variations from 10-year average		
				Acreage	Yield	Production
	1,000 acres	*Bushels*	*1,000,000 bushels*	*Percent*	*Percent*	*Percent*
1927	2,499	119.7	299	−5	+4	−1
1928	2,716	125.0	340	+4	+8	+13
1929	2,373	112.8	268	−9	−2	−11
1930	2,397	113.4	272	−8	−2	−10
1931	2,674	115.3	308	+2	0	+2
1932	2,827	110.9	313	+8	−4	+4
1933	2,701	106.2	287	+3	−8	−5
1934	2,833	119.0	337	+8	+3	+12
1935	2,802	113.4	318	+7	−2	+5
1936	2,366	117.4	278	−10	+2	−8
Average	2,619	115.3	302	[1] 6.4	[1] 3.5	[1] 7.1

[1] Disregarding plus and minus signs.

If the average acreage of the period had been harvested each year, the actual variations in yield per acre would have caused variations in production from 278,000,000 bushels in 1933 to 327,000,000 bushels in 1928, a range of 49,000,000 bushels and the average variation from the 10-year average production would have been only about 10,000,000 bushels.

Variations of acreage from the 10-year average have averaged nearly twice as great as variations of yield (table 2). It appears, therefore, that over a period of years changes in acreage of late-crop potatoes, to a greater degree than changes in yield per acre, are responsible for variations in size of the crop. However, even if it were possible to avoid increases and decreases in acreage from season to season the crops produced would still vary considerably in size because of fluctuations in yield per acre.

In 9 of the 10 years 1927–36, acreage and production varied from their respective averages in the same direction. A year of large production in which prices are normally relatively low, is likely to be followed the next year by reduced acreage. Similarly, a small crop year is likely to be followed by an increase in acreage (table 2).

A study of the relationships of production, yield, and acreage as summarized in table 2 should be helpful to growers when they are

planning production for their own farms. Reports of the United States Department of Agriculture are issued periodically, showing, as the season progresses, such information as the acreage which growers intend to plant, planted acreage, condition of the growing crop, and forecast and estimated production. These reports enable growers and others to keep in touch with the latest information on acreage and production.

UTILIZATION OF THE CROP

In addition to the portion of the crop marketed, some potatoes are used for food on the farms or are saved for seed, and some are unfit for food or seed. Estimates of the Bureau of Agricultural Economics indicate that the disposal of the four crops, 1932–35, in 30 late States averaged about as follows in percentage: Shipped in carloads or by boat, 30; available for market by motor truck or in small lots, 35; saved for food on farms where grown, 16; saved for seed in locality where grown, 11; unfit for food or seed, 8 percent. The quantity available for movement to market by rail, boat, or motortruck was roughly two-thirds of the production. In some years considerable quantities of good potatoes may remain on farms for lack of a remunerative market.

In the surplus-producing States where potatoes are grown on a commercial scale, often in areas far distant from large markets, a much larger proportion of the crop is shipped in carloads than in the 12 other late-crop States. In this latter group where potatoes are grown in small acreages on many farms, and where there is a large consuming population, the proportion saved for food on the farms where grown, or available for marketing by motortruck or in small lots, is larger than in the surplus group.

There are wide differences among the States in the utilization of the crop. Production of late potatoes in 1935 was slightly above average and the utilization was probably fairly representative of recent years in which crops of near-average size were produced. The utilization of the 1935 late crop by States, and the intermediate and early crops by groups, as estimated by the Bureau of Agricultural Economics, is shown in table 3. In important surplus-producing States that are distant from leading markets, such as Maine and Idaho, the proportion shipped in carlots is high; whereas, in Pennsylvania and New York the carlot shipments are relatively small and the quantity available for sale by motortruck or in small lots locally is large.

It will be noted that in 1935 the quantity of late-crop potatoes available for market by truck or in small lots, was considerably greater than that shipped in carlots or by boat. In the late-crop States as a whole about 43 percent of the farms do not grow potatoes, and as potatoes are very important in the diet of most families in rural districts and villages, large quantities are marketed locally in small lots among the rural and village population.

In most years, particularly when production is large, some of the potatoes available for marketing by truck or in small lots are fed on the farms or wasted. The waste and shrinkage in potatoes held over until the spring months is often considerable. In years of small crops and relatively high prices more of the poorer quality potatoes are marketed than in large crop years. On the whole, the quantity of potatoes marketed each season does not vary so widely as the quantity produced.

TABLE 3.—*Estimated utilization of the 1935 late potato crop by States, and by groups for intermediate and early States*

States and groups	Production	Utilization					
		Unfit for food or seed [1]	Saved for food on farms where grown	Saved for seed in locality where grown	Shipped in carloads or by boat [2]	Available for marketing by truck and in small lots	Total
Surplus late potato States:	*1,000 bushels*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Maine	38,400	8.9	2.8	6.4	71.2	10.7	100
New York	27,830	5.0	14.5	11.4	9.0	60.1	100
Pennsylvania	25,536	5.0	17.5	12.2	.9	64.4	100
Michigan	28,101	10.0	18.0	12.5	14.5	45.0	100
Wisconsin	23,534	11.0	25.0	13.2	14.6	36.2	100
Minnesota	29,400	10.0	18.9	12.0	24.8	34.3	100
North Dakota	12,348	8.0	13.0	14.0	50.7	14.3	100
South Dakota	3,400	7.0	44.1	14.3	4.9	29.7	100
Nebraska	10,080	4.0	24.0	7.3	53.5	11.2	100
Montana	1,615	7.0	33.0	13.0	3.0	44.0	100
Idaho	22,360	8.0	2.5	7.0	61.6	20.9	100
Wyoming	2,610	10.0	8.6	13.9	42.7	24.8	100
Colorado	18,000	13.0	2.5	9.1	40.3	35.1	100
Utah	2,040	5.0	11.0	7.3	12.3	64.4	100
Nevada	416	7.9	7.2	8.4	16.6	59.9	100
Washington	7,920	8.0	12.1	6.7	22.0	51.2	100
Oregon	5,670	8.0	12.7	9.6	38.7	31.0	100
California	11,760	6.0	1.5	5.1	60.0	27.4	100
Total	271,020	8.3	13.1	10.1	33.3	35.2	100
Other late potato States:							
New Hampshire	1,150	6.0	36.2	10.5	.1	47.2	100
Vermont	2,128	8.0	31.6	13.0	1.5	45.9	100
Massachusetts	1,945	7.0	27.3	4.9	.2	60.6	100
Rhode Island	718	6.0	9.7	2.1		82.2	100
Connecticut	2,455	7.0	16.3	3.1	.3	73.3	100
West Virginia	3,145	4.0	58.8	10.8	.2	26.2	100
Ohio	16,740	6.2	28.6	9.5	.8	54.9	100
Indiana	6,480	8.5	50.1	9.1	.4	31.9	100
Illinois	4,100	4.0	63.4	8.8	.1	23.7	100
Iowa	7,200	4.0	50.0	12.1	2.0	31.9	100
New Mexico	420	5.0	10.0	15.5	1.4	68.1	100
Arizona	140	2.9	10.0	10.7	2.1	74.3	100
Total	46,621	6.0	39.1	9.5	.7	44.7	100
30 late-crop States	317,641	8.0	16.9	10.0	28.5	36.6	100
7 intermediate-crop States	34,940	3.4	28.4	3.9	32.6	31.7	100
11 early-crop States	33,799	4.0	43.6	2.8	33.8	15.8	100
Total	386,380	7.2	20.3	8.9	29.3	34.3	100

[1] Includes potatoes fed to livestock and sold to starch factories.
[2] In this table carlot shipments from Maine have been computed at 650 bushels per car; those from other late-crop States at 580 per car; those from intermediate and early States at 500 per car.

Starch-manufacturing plants, principally in Maine, use considerable quantities of potatoes, chiefly surplus stock and culls. In years of large crops and low prices the quantity used in Maine for making starch has exceeded 5,000,000 bushels, whereas in years of high prices the quantity used has often been less than 1,000,000 bushels.

VARIETIES

Comparatively few of the many potato varieties are commercially important. Leading commercial varieties of late-crop potatoes belong to the following groups: Rural, Green Mountain, and Burbank. Potatoes of the Cobbler, Triumph, and Early Ohio groups, although generally earlier maturing than the chief late-crop varieties, are important in some late-crop producing areas.

The Green Mountain group is of particular importance in Maine, Long Island, and northern Michigan. Potatoes of the Rural group are the principal varieties in western New York, Michigan, Wisconsin, and Pennsylvania. The Late Petoskey (Russet Rural) is the chief variety in Michigan. The Burbank group is important in the West. In Idaho, Washington, and Oregon, the Russet Burbank, and in California the White Rose are leading varieties.

Potatoes of the Cobbler, Triumph, and Early Ohio groups are produced in quantities in the late-crop areas for table stock, and also for seed, largely for use in the intermediate- and early-crop districts. The Cobbler group is important in Long Island, Maine, and other areas. The Triumph and Early Ohio groups are grown in various districts especially in the Middle West and Great Plains regions. In Colorado, in addition to varieties or groups mentioned, a few others as Red McClure, Brown Beauty, and People's (People's Russet), are commercially important.

The trade term "round white," is in general use to describe potatoes with creamy-white or brownish-white skins and of a roundish shape as contrasted to a long shape. The term is used in referring to potatoes of the Rural, Cobbler, and Green Mountain groups and others of similar shape. Potatoes with red or tinted skins, as Triumph, are not included. Round potatoes with skins of a russeted appearance, as Late Petoskey (Russet Rural), are often included in the term round white although the term "round russet" is sometimes used in referring to round potatoes that have a russeted appearance. The term "long white" is used in referring to potatoes of the Burbank group and various long varieties. The Russet Burbank is mostly sold and quoted under its variety name.

Comparatively new varieties that are being grown in limited quantities in some areas include Katahdin, Chippewa, Golden, Houma, and Warba.

CERTIFIED SEED PRODUCTION

The average annual production of certified seed potatoes in 1932–36 in the United States was slightly less than 10,000,000 bushels of which about one-half was produced in Maine (table 4). Large quantities of northern seed are used in the early and intermediate-crop States as well as in the late-crop States.

TABLE 4.—*Production of certified seed potatoes by leading States, 1932–36*

State	1932	1933	1934	1935	1936	Average, 1932–36
	1,000 bushels	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*
Maine	2,921	3,853	6,003	5,872	6,704	5,071
North Dakota	825	918	628	1,430	893	939
Minnesota	437	602	659	1,344	667	742
New York	550	520	544	415	388	483
Nebraska	392	552	196	815	162	423
Colorado	123	506	425	352	470	375
Others	1,677	1,894	2,005	1,836	1,830	1,848
Total	6,925	8,845	10,460	12,064	11,114	9,882

The seed is certified under requirements of the States where grown as to variety and freedom from disease, based on field inspections by State officials during the growing season. Bin inspections are made

before or at the time of shipment and in most States the stock is required to meet or approximately meet the specifications of U. S. No. 1 grade. Certificates are issued by the State officials and the sacks are tagged to indicate that the potatoes meet the certification requirements. Prices of certified seed are discussed later.

The production of certified seed in 1936 included approximately the following percentages of varietal groups according to Bureau estimates: Cobbler, 41; Green Mountain, 25; Triumph, 8; others, 26.

HARVESTING AND PREPARING FOR MARKET

Reports from practically all commercial late-crop potato districts are to the effect that mechanical injury, particularly cuts and bruises, is the most common defect that is sorted out in grading. In the

FIGURE 3.—Many late-crop potatoes are dug by machine and picked up by hand.

aggregate the damage from this cause represents an immense loss to growers and dealers. Much of this mechanical injury could be prevented by better methods and more care in harvesting and handling the crop. The use of padding or special materials in construction of machinery and utensils used in handling the crop helps to reduce this type of damage. Reports from some areas indicate that through educational methods, bruising and other mechanical injury has been considerably reduced during recent years.

September and October are the months when the bulk of the late crop is harvested. In most of the commercial late-crop districts mechanical diggers are used in harvesting and the potatoes are picked up by hand (fig. 3). In some important areas in the Middle West large quantities are dug with hand forks. The general practice is to pick the potatoes into baskets, then empty them into other containers

such as barrels, field crates, or sacks for hauling to cellars, storage houses, or warehouses. Burlap or other material is sometimes used to pad picking baskets. Baskets constructed of rubber-coated wire have been used in some districts. Potatoes for immediate shipment to market are sometimes graded, sized, and packed in the fields. Portable sizing and grading machines are frequently used in field packing.

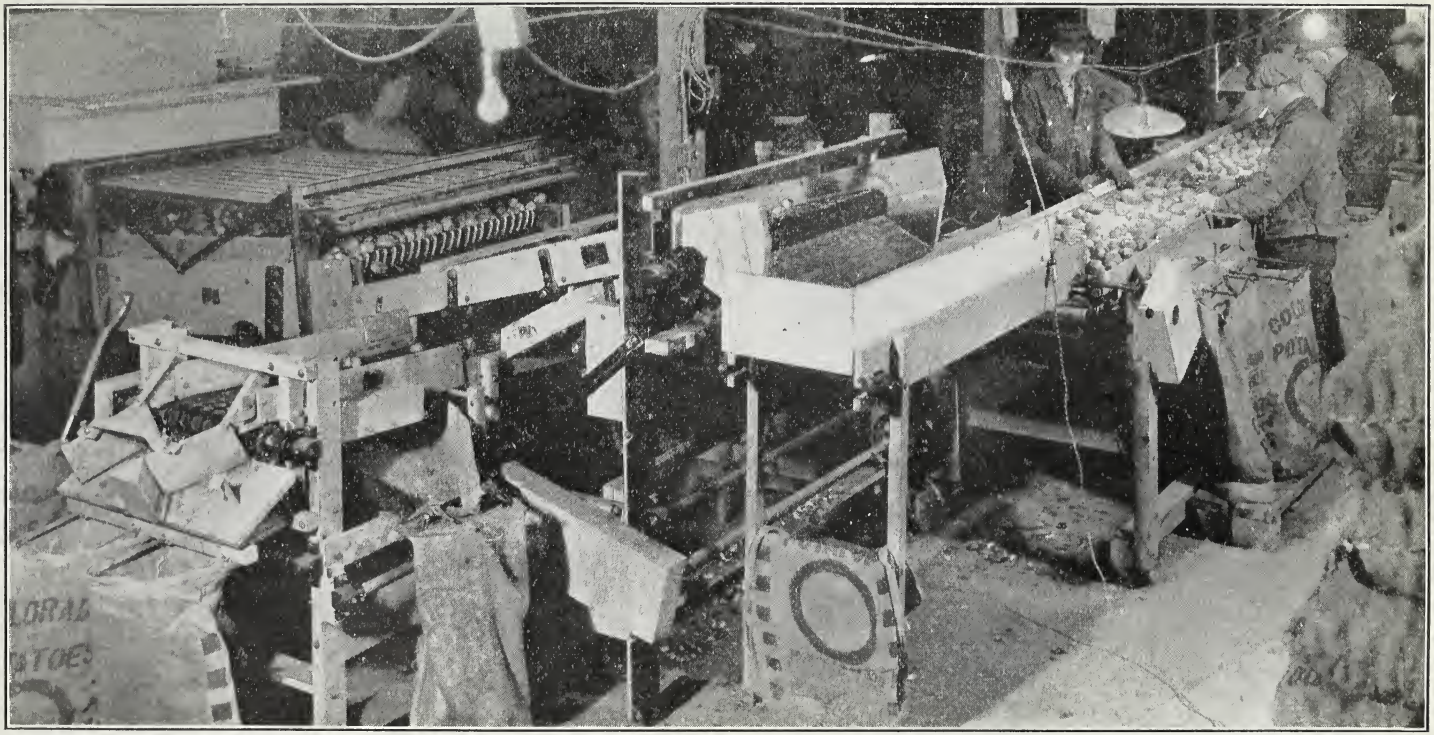
A large part of the crop is hauled from the fields ungraded to the growers' storage houses or to dealers' warehouses to be stored in bins. Most of the grading and sizing are performed by dealers or shippers in their warehouses (fig. 4). In some western areas professional grading crews are employed by shippers and they often work in the storage houses of growers. Some growers, especially those with rather large production, do their own grading and sizing.

A recent development in preparing potatoes for market has been the use of cleaning machines in some areas. Brushing and washing machines of various types of construction are used. When potatoes are badly caked with dirt it has sometimes been difficult to clean them thoroughly by brushing. Cleaning improves the appearance of the potatoes as to brightness. Defects such as bruises, cuts, and scab may be more noticeable in a lot, after it has been cleaned. The proportion sorted out in grading after the stock is cleaned by washing or brushing is therefore usually larger than for uncleaned stock. Some difficulty has been encountered in cold weather in drying potatoes after they are washed.

Definite information is not available as to the quantity of potatoes cleaned by brushing and washing, but for the late crop as a whole in recent years it was probably not more than 10 percent of the quantity marketed. The practice of cleaning potatoes, however, is apparently increasing. The use of cleaning machines of various types is reported in Maine, New York, Minnesota, North Dakota, Colorado, Idaho, California, Washington, and a few other States. Washing potatoes is a common practice in Washington and California. In the other States mentioned the proportion brushed or washed is relatively small. Very few shipments are brushed or washed in Michigan and Wisconsin.

A premium in price is often obtained for the cleaned stock because of its brighter appearance and possibly its greater freedom from defects. Washing or brushing involves some extra expense and often a higher percentage of defective stock is sorted out in grading cleaned potatoes. In some districts, because of the character of the soil and conditions at harvest time, it is difficult to market potatoes that have not been cleaned.

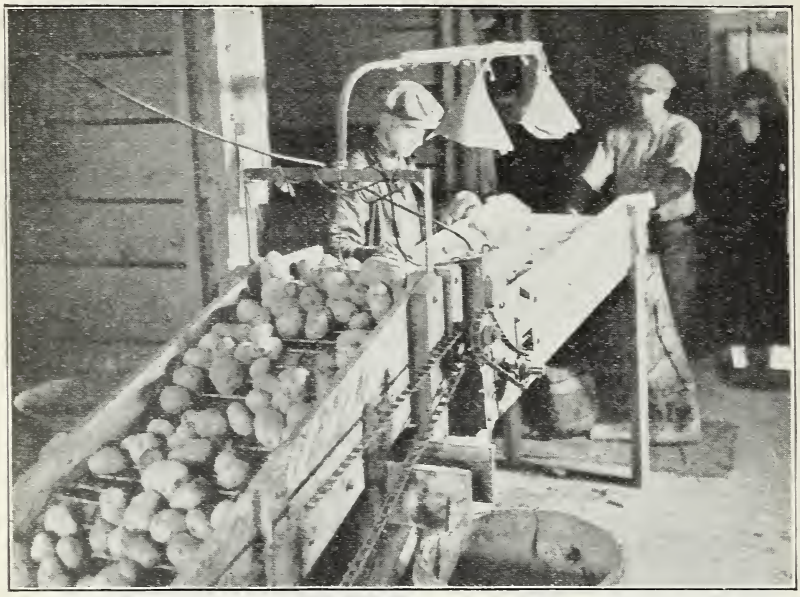
Many different types of sizing and grading machines are in use including some locally constructed equipment. Wire belts with openings 1⅞ inches in diameter or of other desired diameters are widely used in sizing. In the Northwest where most of the potatoes grown are of the long type, sizing is done chiefly by hand as the potatoes move along a conveyor. In the common type of grading machinery there is a conveyor, mostly of belt construction, although roller-type conveyors are sometimes used. The potatoes being graded move along the conveyor and those having defects are picked



BAE 30721

FIGURE 4.—The potatoes, after passing through the washer and over the sizing belt, are carried along the roller conveyor where culls and low-grade potatoes are picked out.

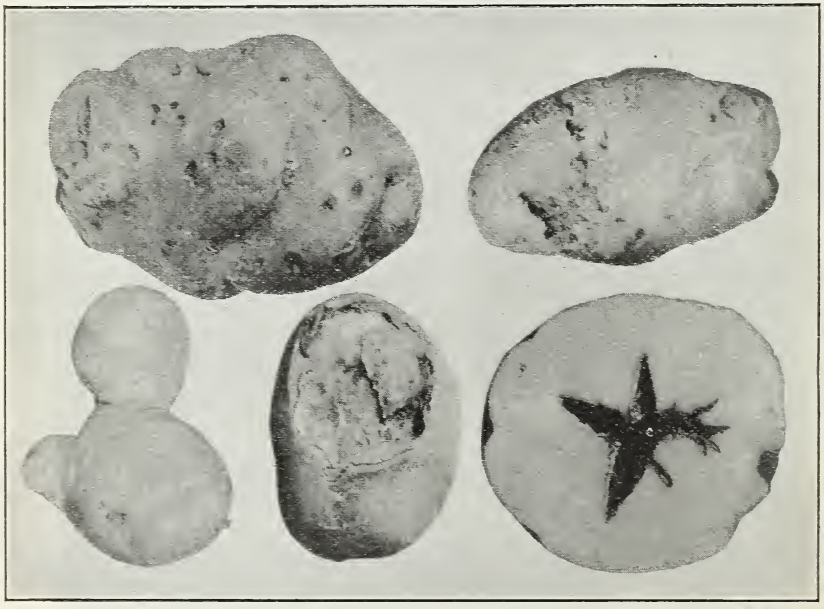
off by hand. Potatoes of the grade being packed pass over the end of the conveyor into sacks (fig. 5).



BAE 30747

FIGURE 5.—After passing over the sizing belt the potatoes pass over a conveyor where the defective stock is picked out.

In addition to bruises and cuts the following classes of defects are among the most prevalent: Second growth, growth cracks, sunburn, badly misshapen potatoes, scab, and decay of various kinds (fig. 6).



BAE 6082

FIGURE 6.—Common defects of late-crop potatoes include: Upper row, left to right, wireworm and scab injury; lower row, left to right, irregular second growth, late blight tuber rot, and hollow heart.

Factors that determine whether or not it pays the grower or shipper to pack a certain grade as U. S. Fancy, U. S. No. 1, or U. S. Commercial, are the loss in weight due to culling out defective potatoes, the cost of grading, the prices being paid for the various grades, and the market for or use which can be made of culls.

Regardless of whether the grower sells on a graded or ungraded basis, it is evident that if there is a large percentage of defective potatoes, he will ordinarily be penalized either through loss in weight in grading or through discount in price of ungraded stock. If through more careful handling and good cultural practices he can reduce the damage from cuts, bruises, sunburn, scab, etc., his returns will generally be increased. Local marketings by motortruck often include some ungraded or partly graded potatoes.

GRADE AND SIZE

The Official Standards for Potatoes, issued September 1936 by the United States Department of Agriculture, provide for and define the following grades: U. S. Fancy, U. S. Extra No. 1, U. S. No. 1, U. S. Commercial, and U. S. No. 2.

Changes in the grading standards are made occasionally as conditions demand, but it is not the policy to make changes during the marketing season. Copies of the latest Official Standards for Potatoes may be obtained from the Bureau of Agricultural Economics, United States Department of Agriculture, Washington, D. C.

A very large part of the potato shipments of the United States are sold on the basis of these official standards, usually called the United States grades. The U. S. No. 1 grade is a common basis of sale and a large part of the late crop is packed and sold as U. S. No. 1 grade. Many shipments are not inspected and for the country as a whole there is no record of the proportion of potatoes sold that meets the requirements of each of the grades. The quality of the crop varies from year to year. In Idaho, where a large part of the shipments have been inspected, records for the 5-year period beginning with the crop of 1932 show that the percentage of inspected lots that have graded U. S. No. 1 ranged from 52 percent for the crop of 1936 to 72 percent for the crop of 1933. The porportion that graded U. S. No. 2 ranged from 20 percent for the crop of 1933 to 40 percent for the crop of 1936. In the Klamath Falls district of Oregon and the nearby district in northern California the percentage of inspected lots showing U. S. No. 1 grade during the 4 crop years beginning with 1933 was very uniform and ranged approximately from 74 percent in 1933 to 76 in 1935. The proportion of U. S. No. 2 shipments in the inspections ranged from 22.7 percent in 1933 to 24.6 in 1934. It is probable that in many other States where different varieties are grown and different conditions prevail that the proportion of shipments meeting certain grades may vary considerably from the percentages in the States mentioned.

As an example of the grade requirements, the United States standards issued September 1936 state the requirements of U. S. No. 1 grade as follows:

> U. S. No. 1 shall consist of potatoes of one variety or similar varietal characteristics which are fairly well shaped, free from freezing injury, blackheart, and soft rot or wet break-down, and from damage caused by dirt or other foreign matter, sunburn, second growth, growth cracks, air cracks, hollow heart, cuts, shriveling, sprouting, scab, blight, dry rot, rhizoctonia, other disease, insects or mechanical or other means. Unless otherwise specified the diameter of each potato shall be not less than 1⅞ inches.

The standards provide further for specifications of size and definite tolerances in regard to defects and size requirements.

The meaning of the various terms is defined in the standards. For example, "soft rot or wet break-down" is defined in the standards of September 1936 as "any soft, mushy, or leaky condition of the tissue such as slimy soft rot, leak, or wet break-down following freezing injury or sunscald."

The U. S. Fancy grade is intended for use of growers and shippers who wish to put up a pack of very fine appearance and high quality that is much above the average. At present there is very limited use of this grade.

The requirements of U. S. Extra No. 1 are somewhat higher than those of U. S. No. 1 in regard to size, and less dirt is permitted.

The requirements for U. S. Commercial grade are somewhat less strict than U. S. No. 1. A considerable volume of shipments are packed and sold on the basis of this grade.

The requirements for U. S. No. 2 grade are considerably lower than for U. S. No. 1. In some areas and seasons considerable quantities are packed and sold as U. S. No. 2.

The term "bakers" is used by the trade in referring to large potatoes suitable for baking purposes. According to the official grades of the Idaho Department of Agriculture, published July 1, 1932, potatoes of 8 ounces in weight or larger, when graded and packed according to certain specifications, may be designated "Idaho bakers."

CONTAINERS USED IN MARKETING

The 100-pound burlap sack is by far the most widely used container in marketing late-crop potatoes. Sacks are usually packed to contain 100 pounds net at shipping point. Shrinkage in weight up to 2 percent between shipping point and destination is commonly recognized in the trade as likely to occur under average conditions. Some shippers pack slightly more than 100 pounds in a sack to ensure that the shrinkage will not result in short weight at destination. Cotton sacks of 100-pound capacity have been used in a few districts for certain varieties. Sacks of 120- and 150-pound capacities were formerly in common use, but in recent years their use has been practically discontinued for shipments of table stock. Seed stock is shipped in sacks of 165-, 150-, 120-, and 100-pound capacities. There was formerly a large carlot movement of potatoes in bulk, particularly from Maine, but bulk shipments, although still considerable, have declined greatly in volume.

There has been a tendency in some areas toward a moderate increase in use of small sacks of 10-, 15-, 25-, 50-, and 60-pound capacities. The smaller sizes are often referred to as consumer packages. Small sacks made of various materials have been used, as cotton, paper, and burlap. In some instances they are of open-mesh material. The premium per 100 pounds on shipments in small sacks and the extra expense of packing in small sacks are the chief considerations in determining whether to use them. In some instances the small sacks may increase the market outlet but at little if any additional profit.

Arguments advanced by those in favor of a greater use of small consumer packages for potatoes are that: They are more convenient to handle and there is less damage from bruising and mechanical injury in loading and unloading from cars or trucks; there is no loss to the

retailer from shrinkage; potatoes packed in this way must be better graded than when packed in large sacks; the small bag reaches the consumer and when neatly branded has advertising value.

Those opposed to the use of small bags argue that: Many customers prefer to see the potatoes and examine them before buying, and for many small-bag packs this is impossible; packing in small bags adds to the cost; if of light-colored material the small bags are likely to become soiled or unattractive; deterioration occurring after packing due to freezing, sprouting, or other causes would result in a reaction by consumers against this type of package. They also maintain that there would be a tendency for shippers to lower the quality of the small pack after it had come into general use.

Reports from at least one large market indicate that the use of small sacks has declined because some dealers packed poor quality stock in such containers which soon ruined the consumer demand that had been built up over a period of several years.

A survey made in 1929 relating to the 1928 crop indicated that the chief use of the small bags was in Idaho, and that roughly, 5 percent of the shipments were in small bags. Bags used included 15-, 20-, 25-, and 50-pound sizes. An inquiry in the fall of 1936 indicated that approximately 10 percent of the Idaho shipments were in small containers, including bags of 10-, 15-, 25-, and 50-pound sizes and a few shipments in boxes of about 1-bushel capacity. The 10- and 15-pound sacks were the most popular. In Washington and Oregon the 50-pound sack is used principally for second-grade stock. In Maine and Pennsylvania there has been considerable use of small sacks.

It is estimated roughly that, exclusive of strictly local sales in the villages and rural districts, about 85 to 90 percent of the table stock from the late-crop surplus-producing States is packed in 100-pound sacks, and the remainder is packed in smaller containers or shipped in bulk. Most of the bulk shipments are from Maine.

GRADING AND MARKING REQUIREMENTS

Special laws pertaining to grading potatoes and marking certain information on the containers in which they are sold have been enacted in a number of States. Other States have similar requirements under general fruit and vegetable standardization laws. Most of these State laws require that potatoes offered for sale shall be graded in conformity with official standards and the container marked with the grade, net content, and name and address of the person responsible for packing. In some instances, particularly in the case of seed stock, the variety name must also be shown on the container. Many of these State laws have been enacted or revised during the last decade. Growers and shippers should consult the agricultural departments in the States in which they live, or in which they sell their crops, so as to be informed definitely on the grading and marking requirements.

The net weight amendment of the United States Food and Drug Act requires that in interstate shipments the net weight or dry measure be stamped on the container. It is therefore the general practice to show the net weight on sacked potatoes.

Vigorous steps are being taken by the Food and Drug Administration in cooperation with the Federal food product inspection service to eliminate the practice of misbranding interstate shipments of potatoes. This practice of misbranding by marking sacks with higher grades than the contents justified had become rather widespread.

FEDERAL-STATE INSPECTION

The Federal-State inspection service is available for a small charge in most of the important producing districts (fig. 7). The service is optional with the shipper insofar as the Federal Government is concerned. A few States require or have authority to require inspection of potato shipments. A certificate giving a statement of the grade and description of the shipment is furnished to interested parties as a part of the service (fig. 8).

BAE 30688A

FIGURE 7.—This Federal-State inspector empties a sack to examine the potatoes as the car is being loaded.

F. P. I.—30 ORIGINAL.

UNITED STATES DEPARTMENT OF AGRICULTURE
MAINE DEPARTMENT OF AGRICULTURE

No. 67999

INSPECTION CERTIFICATE

This certificate is issued in compliance with the regulations of the Secretary of Agriculture governing the inspection of various products pursuant to the Act making appropriations for the United States Department of Agriculture and the statutes of the State of Maine, and is admissible as prima facie evidence in all courts of the United States and of Maine. This certificate does not excuse failure to comply with any of the regulatory laws enforced by the United States Department of Agriculture.

Inspection point Presque Isle, Maine *Billing point* Presque Isle, Maine *Date* Feb. 27, 1936

Applicant John Doe *Address* Presque Isle, Maine

Shipper Same *Address* Same

I, the undersigned, on the date above specified made personal inspection of samples believed by me to be representative of the lot of products herein described, and do hereby certify that the quality and/or condition, at the said time and on said date, pertaining to such products, as shown by said samples, were as stated below:

Car initial and number S F R D 1 8 4 5 1 *Kind of car* Refrigerator

Car equipment and condition at completion of inspection 3 p.m. (Hour) Hatch covers closed, plugs in, bunkers empty except unlighted charcoal heater in A end, drain pipes plugged, paper on floor racks, wood stove burning between doorways, car preheated.

Products: Green Mountain type P O T A T O E S in new sacks, branded "Grade U. S. No.1, Maine Potatoes, X Y Z Brand, packed by John Doe, Presque Isle, Maine, 100 lbs. net". Loader's count 400 sacks.

Loading: Each end of car 7 rows wide, 5 and 6 layers high, lengthwise.

Pack:

Size: Ranging from 1 7/8 to 4 inches; mostly 2 1/2 to 3 1/4 inches in diameter, 60 percent or more by weight 2 1/4 inches and larger in diameter.

Quality and condition:
Stock is firm, fairly well matured, fairly clean, and fairly bright. Grade defects average 4 percent, chiefly bruises, fork injury, and growth cracks. No soft rot.

Grade: U. S. No. 1 Size A.

Fee $3.00
Expenses
Total

William Haley *Inspector.*

8—3575 PLEASE REFER TO THIS CERTIFICATE BY NUMBER U. S. GOVERNMENT PRINTING OFFICE

BAE 33119

FIGURE 8.—A Federal-State inspection certificate is an official record and certification of the grade and description of the shipment.

In the 5-year period, July to June inclusive, 1931–32 to 1935–36, the percentage of carload potato shipments from 30 late-crop States which were inspected at shipping points ranged approximately from 23 percent in 1932–33 to 58-percent in 1935–36. The number of cars inspected at shipping points during this period is shown by States and seasons in table 5. The great increase in shipping-point inspections in 1935–36 was due largely to increases in Maine and a few other States. About 70 percent of the 1935–36 inspections in 30 late-crop States were in three States—Maine, Idaho, and Colorado.

The Federal inspection service is also available in the larger city markets. The number of cars inspected in the cities is much smaller than the number inspected at shipping points. From July 1935 to June 1936, inclusive, it totaled 8,405 cars including late-, intermediate-, and early-crop shipments.

The use of official grading standards and the Federal-State inspection service facilitates transactions between shippers and distant buyers, furnishes a basis for contract sales, and discourages rejection of shipments at the markets without just cause. An inspection certificate showing detailed information concerning the shipment is an aid in settling any damage claim with the transportation company. A Federal-State inspection certificate is accepted as prima facie evidence in any United States court and in some State courts. Growers are encouraged to produce good quality and shippers to pack properly through the use of official grading standards and the inspection service.

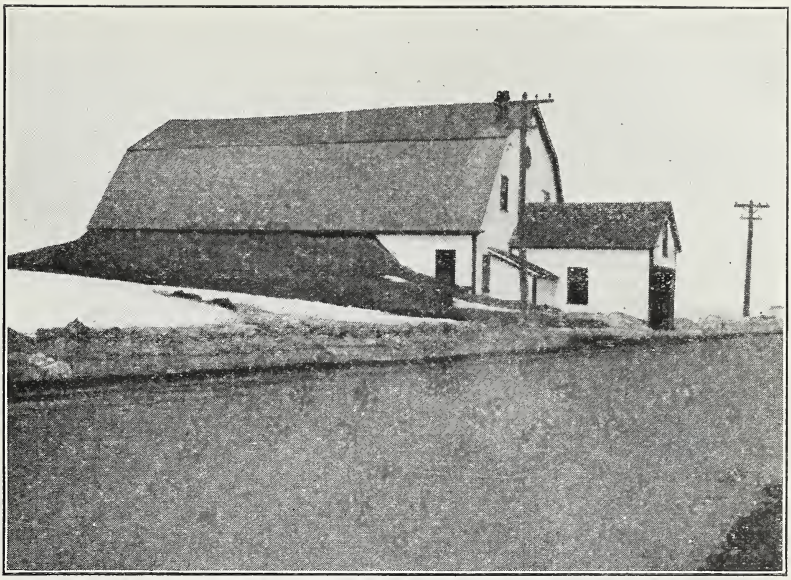
TABLE 5.—*Number of cars of potatoes inspected at shipping points under Federal-State service, by States, July to June inclusive, 1931–32 to 1935–36* [1]

State	1931–32	1932–33	1933–34	1934–35	1935–36
Late-crop States:	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*
Arizona			20		
California	960	695	1,419	835	3,514
Colorado	7,577	7,004	12,306	3,207	12,449
Idaho	18,324	13,461	26,673	24,940	25,351
Indiana	1		8	1	2
Iowa	52	10	229	67	69
Maine	3,775	231	3,429	7,678	24,805
Michigan			247	10	26
Minnesota	3,921	4,329	6,002	3,339	4,202
Montana	116	53	174	42	20
Nebraska	6,909	748	2,009	1,191	4,285
Nevada	3	4	27		1
New York	6,018	1,265	1,254	1,603	879
North Dakota	2,758	1,316	3,517	2,079	2,258
Ohio	68	47	126	546	864
Oregon	2,557	1,479	4,161	6,370	6,164
Pennsylvania	21	2	38	127	86
Utah	742	555	776	1,129	926
Vermont	1				
Washington	3,210	1,508	3,683	2,879	1,499
West Virginia	112	115	44	3	10
Wisconsin	1,104	614	390	1,133	519
Wyoming	1,142	261	818	539	1,006
Total	59,371	33,697	67,350	57,718	88,935
Intermediate-crop States	10,868	9,154	5,158	10,571	8,659
Early-crop States	8,084	8,646	18,498	13,586	13,440
Total United States	78,323	51,497	91,006	81,875	111,034
Proportion of carlot shipments from late-crop States inspected	*Percent* 34	*Percent* 23	*Percent* 40	*Percent* 35	*Percent* 58

[1] Small quantities of motortruck shipments inspected have been converted to a carlot basis and included in this table. Inspections reported for Oregon include some potatoes originating in northern California. This, together with the fact that reported crop-year shipments include slightly more than a 12-month period, explains the fact that inspections shown in this table in a few instances exceed crop-year shipments, as shown in table 8.

STORAGE IN PRODUCING AREAS

A large part of the commercial late crop of potatoes is stored at harvest time in farm cellars or storages of various types (fig. 9). Considerable quantities are also placed in common storage houses along railroad tracks. Cold storages, or those in which temperatures are maintained by mechanical means, are used only to a limited extent in keeping the potato crop. Their use is largely confined to storing some of the shipments of seed stock.



BAE 30751

FIGURE 9.—A modern farm potato storage in Maine.

The average freezing point of potatoes is slightly below 29° F. Recommended storage temperatures range from 36° to 50° with a relative humidity of 85 to 90 percent.[2] Potato storage and storage houses are discussed by Stuart.[3]

SHRINKAGE

The loss in weight of merchantable potatoes in storage from evaporation, and such other causes as decay and sprouts, varies widely with storage conditions, length of storage period, and condition of potatoes when stored. Losses in farm storage often range roughly from 5 to 20 percent and sometimes higher. The probable loss in storage is an important consideration for farmers in determining whether to sell at harvest time or later. A study of the effects of various factors on storage losses is discussed by Smith.[4] A recent publication by Edgar includes information on shrinkage.[5]

MERCHANTABLE STOCKS ON JANUARY 1

January 1 stocks held by growers, local dealers, and buyers form a significant marketing guide since they represent most of the available late-crop supply. On the average, slightly less than half of the merchantable stocks available at the beginning of the season remain in the hands of growers, local dealers, and buyers on January 1 for marketing during the remainder of the crop year. A survey is made annually in January by the Bureau of Agricultural Economics to

[2] ROSE, D. H., WRIGHT, R. C., and WHITEMAN, T. M. THE COMMERCIAL STORAGE OF FRUITS, VEGETABLES, AND FLORISTS' STOCKS. U. S. Dept. Agr. Cir. 278, 40 pp. 1933.

[3] STUART, W. POTATO STORAGE AND STORAGE WAREHOUSES. U. S. Dept. Agr. Farmers' Bull. 847, 27 pp., illus. 1917.

[4] SMITH, O. STUDIES OF POTATO STORAGE. N. Y. (Cornell) Agr. Expt. Sta. Bull. 553, 57 pp., illus. 1933.

[5] EDGAR, A. D. POTATO STORAGE HOUSES IN MAINE. U. S. Dept. Agr. Technical Bull. 615, 1938.

ascertain the quantity of these stocks. In recent years they have varied from about 0.6 bushel to about 1 bushel per capita for the population of the United States (table 6).

TABLE 6.—*Estimated merchantable stocks of potatoes held by growers, local dealers, and buyers, January 1, by groups of States, 1930–37*

State group	Jan. 1, 1930, crop of 1929	Jan. 1, 1931, crop of 1930	Jan. 1, 1932, crop of 1931	Jan. 1, 1933, crop of 1932	Jan. 1, 1934, crop of 1933	Jan. 1, 1935, crop of 1934	Jan. 1, 1936, crop of 1935	Jan. 1, 1937, crop of 1936
	1,000 bushels	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*
18 surplus late-crop States	76,628	82,232	104,365	99,354	92,875	115,270	96,889	73,562
12 other late-crop States	4,377	4,397	5,987	7,781	5,217	9,879	7,387	3,651
30 late-crop States	81,005	86,629	110,352	107,135	98,092	125,149	104,276	77,213
7 intermediate-crop States	1,994	1,607	1,712	1,595	1,242	1,566	1,393	798
37 late- and intermediate-crop States	82,999	88,236	112,064	108,730	99,334	126,715	105,669	78,011
STOCKS AS PERCENTAGE OF POTATOES SOLD OR AVAILABLE FOR SALE								
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
18 surplus late-crop States	48	51	56	57	53	56	52	44
12 other late-crop States	28	32	37	38	36	48	35	21
30 late-crop States	46	50	55	55	51	56	50	42
7 intermediate-crop States	8	6	7	7	7	7	6	4
37 late- and intermediate-crop States	42	44	50	50	48	51	46	39

The quantity of potatoes held in storage in the cities is usually of minor importance. However, at times when city dealers expect enhanced prices, considerable stocks may be accumulated in the stores of jobbers and other dealers.

When the January 1 stocks held by growers, local dealers, and buyers are somewhat less than 50 percent of that part of the crop sold or available for sale, the limited supply is likely to be a strengthening market factor in the winter and spring. For the eight crops, 1929–36, the January 1 stocks in 37 States ranged from 39 percent of the quantity sold or available for sale from the 1936 crop, to 51 percent from the 1934 crop (table 6). The effect on the market varies somewhat with the geographic location of the stocks.

LOADING CARS AND TRANSPORTATION OF CROP

The minimum quantity of potatoes on which carload rates apply is 36,000 pounds in many of the late-crop States, but in Maine 40,000 pounds has been the minimum load to most destinations. Freight rates from representative shipping points to leading markets as of February 1937 are shown in table 7. The cost of transportation as shown in this table varies rather widely according to producing district and length of haul. For example, the rate per 100 pounds to Chicago from Waupaca, Wis., is shown as 19 cents compared with 70 cents from Idaho Falls to Chicago.

Practically all carlot shipments of late potatoes are made in refrigerator cars. These cars are equipped with floor racks and in cold weather the floor rack and sides of the car to the height of the load are often lined with heavy paper and sometimes also with straw. When the weather is very cold, heaters are placed in the cars to

prevent freezing. The general practice is to place a heater which usually burns charcoal in a bunker of the refrigerator car. Occasionally two heaters are used in the car, one in each bunker. In cold weather many cars are preheated before shipment, usually by placing a stove in the car near the doorway.

A protective service against cold is offered to potato shippers by the carriers in late-crop shipping districts to destinations in certain areas. Under this arrangement the transportation company takes care of the heating of the cars for a specified charge and assumes the responsibility of delivering the potatoes at destination free of freezing injury. The charge for Carriers' Protective Service Against Cold as reported in February 1937 ranged generally from 2 to 8 cents per 100 pounds, depending on the shipping point and destination.

TABLE 7.—*Freight rate per 100 pounds on potatoes from representative shipping points to specified markets* [1]

Shipping point	Boston	New York	Pittsburgh	Detroit	Chicago	Kansas City	Atlanta	Los Angeles
	Cents	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
Presque Isle, Maine	39½	50	60½	68	80½	94	89	151
Rochester, N. Y	33½	28½	27	29	39½	58	59	151
Cadillac, Mich	52	51	36	27	30½	50	58	128
Waupaca, Wis	54	52	42	33	19	38	63	113
Moorhead, Minn	67	65	57	49	36	41	76	113
Monte Vista, Colo	92	90	78	73	58	40	85	103
Idaho Falls, Idaho	104	102	88	84	70	52	97	52
Yakima, Wash	117	117	102	95	87	74	135½	73½
Stockton, Calif	122	122	107	100	92	80	135½	25

[1] These rates as of February 1937 are based on carloads of minimum weight as follows: 36,000 pounds except from Presque Isle to Boston, New York, Pittsburgh, Detroit, and Chicago, 40,000 pounds; from Monte Vista and Idaho Falls to Kansas City, 30,000 pounds; from Idaho Falls to Los Angeles there was also a minimum load of 24,000 pounds for which the rate was 67 cents. On shipments from Presque Isle to Atlanta, a minimum weight of 40,000 pounds is computed at 29 cents and 30,000 pounds at the remainder of the rate (60 cents). This table is presented merely to show approximate transportation charges and can have no standing in adjusting claims with the carriers.

In some instances shipments are carried under Shippers Protective Service Against Cold. Under this service the responsibility for protecting the shipment from freezing injury rests with the shipper.

Various methods of arranging sacks in the car are used in loading potatoes (fig. 10). In one type of load, common in Maine and some other States, sacks are laid flat, lengthwise of the car, six layers high, with the top layer five rows wide and the other layers seven rows wide. This makes 40 sacks in a stack. There are 5 stacks in each end of the car, leaving a space between the doors, and making a total of 400 sacks in the load. In some loads the sacks in the lower layer are not arranged tightly against the side walls, thus decreasing the danger of freezing injury. A common practice is to arrange the sacks so that the stacks on each side of the space at the center of the car between the doors slopes backward from the bottom to the top layer. This arrangement serves as a bulkhead in preventing the load from shifting. In some loads the sacks in the lower layer are stood on end with three or four upper layers lying flat upon them. In this type of load, some shippers place the lower layer with the tops of the sacks on the floor, so that in case of any freezing injury the damaged potatoes can be more easily removed. It is a common practice, particularly in some Western States, to load so that a space is left between the walls and the sacks, thus permitting the circulation of air (fig. 10, *D*). Freezing injury during shipment is most likely to occur near the floor and along the walls in the lower layer.

(A)–BAE 30748, (B) 30741, (C) 30752, (D) 30722

FIGURE 10.—Various methods of loading cars with potatoes: *A*, A common type of load in Maine. Heavy paper is used on the floor and walls as a protection against cold. *B*, The lower layer is loaded with tops of sacks down. In case of slight freezing injury damaged potatoes can be removed without emptying sacks. *C*, Inspector examining a partly loaded car of 15-pound paper sacks in paper-lined car. *D*, This general type of load is commonly used in Colorado and Idaho, a space being left between the load and the car walls.

METHODS OF SALE IN PRODUCING DISTRICTS

Methods used by potato growers in selling their crops depend, among others, on such factors as nearness to market, established custom in the district, and organization of growers. Large quantities are sold by growers to country dealers or shippers both at harvest time and throughout the season. Growers often haul the ungraded potatoes in bulk direct from the field, cellars, or storage house to the local dealer's warehouse where they are graded, sized, and sacked. Settlement is made on the basis of the outturn of the specified grade or grades. Some sales by growers are on a field-run or ungraded basis. In some instances the potatoes are graded and sacked by the growers in their cellars or storage houses, sacks often being provided by the dealer who is to handle the potatoes. In some districts many potatoes are bought direct from the farmers by city dealers.

The use of the motortruck has brought about many changes in potato marketing in the last 10 or 15 years. Merchant truckmen frequently buy direct from growers at the farm, often on an ungraded basis. Potato growers who are located within 50 or 100 miles of good markets often truck their own product and sell it either on a farmers' market, through dealers, or direct to retailers.

In some areas large quantities of potatoes are sold by growers through cooperative associations or exchanges. Cars are usually loaded by local units of the association and sold through the central office.

It is a common practice for carload dealers at shipping points to sell potatoes on a "delivered at destination" basis. In such instances, for market-news purposes the price is quoted as "carloads f. o. b. shipping point (based on delivered sales less all transportation costs)." This gives a fairly uniform basis of quotation at any shipping point regardless of the variation in delivered-sale prices in different markets due to different transportation costs. Carload sales of potatoes in producing districts are also made on an f. o. b. shipping-point basis. These may be for cash at shipping point or payment may be made on arrival of the shipment at destination. Usually only a very small part of the late-potato shipments are consigned.

Large city dealers and chain-store organizations generally send their own buyers into the chief shipping districts.

MARKET INFORMATION

Growers and shippers who are well informed as to production, available stocks, movement to market, quality, and prices are in a better position to market their crops intelligently than those who are poorly informed.

Government reports are issued periodically and supply various types of information that are useful to growers and shippers in marketing their crops. These Federal or Federal-State reports are disseminated by radio and through newspapers and are mailed, free of charge, upon request to the Bureau of Agricultural Economics, Washington, D. C., or to field offices in producing areas or various cities. Current information will also be sent by telephone and telegraph, charges collect.

The Government market-news reports are published daily during the main part of the shipping seasons in leading producing areas and in the large cities. They include information on wholesale prices by

variety and grade in the various commercial shipping areas and in the leading markets. They furnish records of daily carlot shipments of potatoes by States of origin, and in some instances show primary destinations of shipments. Carlot arrivals and track holdings in the leading markets are also shown. For a few cities reports of motor truck receipts are available and are included in the market-news reports. The market-news information on shipments, arrivals, and unloads is obtained through the cooperation of the railroads.

This information enables growers to judge whether or not prices being offered in their districts are in line with prices in the markets and in other producing districts, and whether to accept or reject offers. The information on shipments and supplies in the markets, together with reports on production enable them to form an opinion as to whether to sell or hold for better prices.

Other reports issued by the Bureau include a summary of carlot shipments published weekly; reports on acreage, condition of the crop, and, as the growing season progresses, the forecast and the estimated production. Since supply is a principal price-making factor these reports are of prime importance in keeping growers and others informed on prospective and current market conditions.

The monthly report of the Bureau on the vegetable situation includes much information on potatoes. This report includes an analysis of the current supply and demand situation as it affects the potato market.

In addition, many bulletins and special reports are available through Federal and State agencies relating to various aspects of the potato industry. Trade papers and private marketing reports are also sources of price, supply, and other market information.

CARLOT, BOAT, AND MOTORTRUCK SHIPMENTS

On the average, about 30 percent of the potatoes produced in the late-crop States in recent years was shipped to market in carloads or by boat. In the 18 surplus late-crop States about one-third of the crop has moved by rail or boat compared with only about 10 percent in 12 other late-crop States. Over 99 percent of the late-crop carlot shipments originated in the 18 surplus States.

Nearly three-fourths of the carlot and boat shipments of potatoes in the United States are late-crop stock (table 8). For the five seasons, 1931–32 to 1935–36, late-crop shipments averaged about 157,000 cars compared with about 31,000 cars of early-crop, and about 24,000 cars of intermediate-crop potatoes. The rail and boat movement from Maine is far in excess of that from any other State. Idaho is second in volume of carlot movement.

Boat shipments comprise only a very small part of the total late-crop movement. Considerable quantities of Maine potatoes move by boat to Atlantic and Gulf ports. In 1935, about 16 percent of the receipts of Maine potatoes in four cities, Boston, New York, Philadelphia, and New Orleans, was by boat. In 1936 the corresponding figure was 7 percent.

TABLE 8.—*Carlot and boat shipments of potatoes, by late-crop States and by intermediate-crop, and early-crop groups, crop years, 1931–32 to 1935–36* [1]

States and groups	1931–32	1932–33	1933–34	1934–35	1935–36	5-season average
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
18 surplus producing late-crop States:						
Maine	53,224	44,043	48,756	53,996	42,081	48,420
New York	10,409	8,058	7,153	7,690	4,347	7,531
Pennsylvania	634	194	573	573	394	474
Michigan	8,856	9,946	5,129	11,944	7,009	8,577
Wisconsin	13,351	9,630	5,218	17,507	5,939	10,329
Minnesota	19,209	14,362	17,123	8,237	12,591	14,304
North Dakota	7,277	4,526	8,390	5,045	10,797	7,207
South Dakota	79	1,330	552	12	286	452
Nebraska	8,307	4,294	9,316	3,525	9,295	6,947
Montana	393	222	369	171	85	248
Idaho	25,916	22,526	30,066	26,639	23,761	25,782
Wyoming	2,142	821	2,436	681	1,391	1,494
Colorado	7,529	7,266	12,395	3,265	12,505	8,592
Utah	954	613	723	832	432	711
Nevada	248	223	201	110	119	180
Washington	6,993	4,996	5,920	6,013	3,006	5,386
Oregon	3,068	2,515	4,110	6,077	3,785	3,911
California [2]	4,711	3,529	5,407	6,821	6,000	5,294
Total	173,300	139,094	163,837	159,138	143,823	155,838
12 other late-crop States:						
New Hampshire	71	19	22	12	1	25
Vermont	224	97	70	156	57	121
Massachusetts	11	36	21	47	5	24
Rhode Island						
Connecticut		51	29	100	13	39
West Virginia	165	138	23	24	10	72
Ohio	144	94	36	151	225	130
Indiana	12	20	1	39	39	22
Illinois	76	55	9	39	3	36
Iowa	171	367	659	161	248	321
New Mexico	10	8		14	10	8
Arizona	80	70	73	50	5	56
Total	964	955	943	793	616	854
Total early-crop States [3]	41,330	22,303	25,811	37,751	28,988	31,237
Total intermediate-crop States	30,229	23,613	20,170	23,737	22,768	24,103
Grand total	245,823	185,965	210,761	221,419	196,195	212,033

[1] Shipments are mostly for the following periods: Late-crop States, July to June, inclusive; early States, January to August; intermediate-crop States, June to October. Scattering shipments before and after these dates are included in the crop years shown in this table.
[2] California late-crop shipments only.
[3] Includes some California early-crop shipments.

The quantity available for marketing by motortruck and in small lots in the 18 surplus producing States is usually a little more than one-third, and in the 12 other late-crop States it is usually between 40 and 45 percent of the production. Immense quantities of potatoes are used in the villages and by the rural population not on farms. Excluding this strictly local movement, the quantity moved to consuming markets by truck is much less than the rail and boat movement. Truck receipts of potatoes in eight large markets averaged about 25 percent of all receipts including rail, boat, and truck, for the 5 years 1932–36. Truck movement is relatively heavy in producing districts located near large cities or thickly populated areas. A large part of the truck movement of potatoes is within a radius of 100 or 125 miles, although there is some movement for much greater distances.

Excluding the movement to villages and other strictly local hauls, it was estimated that 26 percent of the potatoes marketed in 1934 in the United States were shipped to the consuming markets by motortruck. For the East North Central States, the corresponding figure was 52 percent; for the group, New York, New Jersey, Pennsylvania,

Maryland, Delaware, Virginia, and West Virginia, it was 49; and for New England it was only 10 percent.

COMPETITION AS INDICATED BY MONTHLY CARLOT SHIPMENTS

A large part of the late crop is marketed from September to May, inclusive. About 91 percent of the carlot and boat shipments from 30 late-crop States was made during this period in recent years (table 9). These shipments from the late-crop States include considerable quantities of early- or intermediate-crop potatoes from some States as California, Washington, Nebraska, and New York. More than two-thirds of the shipments from the early and intermediate States were in June, July, and August. Truck movement from these States is also heavy during the summer.

TABLE 9.—*Proportion of carlot and boat shipments of potatoes from specified States and groups, moved each month, average July 1932–June 1936*

State or group	July	August	September	October	November	December	January	February	March	April	May	June	Total
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Maine	0.6	0.4	4.2	9.9	9.3	9.1	13.3	14.5	14.7	11.8	8.7	3.5	100.0
New York	1.4	9.2	8.9	12.2	9.7	8.8	12.0	9.5	12.6	9.9	4.6	1.2	100.0
Michigan	.1	.7	4.4	12.3	9.8	8.3	12.3	10.5	11.4	13.3	11.1	5.8	100.0
Wisconsin	.1	7.3	10.4	13.2	8.0	7.3	9.8	10.2	12.5	10.6	7.0	3.6	100.0
Minnesota	.1	2.7	12.5	14.2	5.2	2.7	5.5	13.2	29.3	10.9	2.9	.8	100.0
North Dakota	------	.7	16.1	26.5	4.1	2.1	5.1	9.4	24.6	9.3	1.6	.5	100.0
Nebraska	.3	5.1	6.6	9.5	9.7	9.9	22.7	18.1	12.4	4.6	1.1	------	100.0
Colorado	1.6	5.2	10.5	15.4	9.8	9.5	14.6	12.0	11.7	7.0	2.4	.3	100.0
Idaho	1.7	4.4	8.6	11.5	9.8	8.7	12.8	10.1	13.1	12.2	6.2	.9	100.0
Washington	6.8	11.6	14.7	10.8	8.3	5.2	9.8	7.2	10.3	9.9	2.9	2.5	100.0
California [1]	12.0	8.9	10.3	8.2	6.9	5.7	5.4	3.8	3.2	1.5	10.2	23.9	100.0
30 late-crop States	1.8	3.8	8.2	12.2	8.7	7.6	11.8	11.6	14.4	10.1	6.2	3.6	100.0
Early- and intermediate-crop States	26.2	8.8	3.3	.6	------	.2	.2	.6	1.9	5.8	18.9	33.5	100.0
United States	7.5	5.0	7.1	9.5	6.7	5.9	9.0	9.0	11.4	9.1	9.2	10.6	100.0
	1,000 cars	*1,000 cars*	*1,000 cars*	*1,000 cars*	*1,000 cars*	*1,000 cars*	*1,000 cars*	*1,000 cars*	*1,000 cars*	*1,000 cars*	*1,000 cars*	*1,000 cars*	*1,000 cars*
30 late-crop States	2.8	6.0	12.9	19.2	13.7	12.0	18.5	18.3	22.6	15.9	9.8	5.7	157.4
Early- and intermediate-crop States	12.6	4.2	1.6	.3	------	.1	.1	.3	.9	2.8	9.1	16.1	48.1
United States	15.4	10.2	14.5	19.5	13.7	12.1	18.6	18.6	23.5	18.7	18.9	21.8	205.5

[1] Includes California late-, early-, and intermediate-crop.

On the average, competition of early-crop potatoes with the late-crop is not very significant until April, insofar as relative volume of movement to market is concerned. In May, shipments of the early crop usually increase until they exceed late-crop shipments in the daily movement.

March is the month of heaviest rail movement of potatoes from the late-crop States. In the period shown in table 9, about 14 percent of the shipments from 30 late-crop States occurred in March. The month of next heaviest movement was October, with 12 percent. Motortruck movement is considerably heavier in October than in March, as indicated by receipts in a number of larger markets. The proportion shipped each month varies among the States. Although March is the month of heaviest movement in Maine, Minnesota, and

Idaho, it is not the heaviest in some other States as Colorado, North Dakota, and Wisconsin. The late crop as a whole is shipped in large quantities at harvest time or shortly after, in October. The movement is at a slower rate through November and December, then increases and continues at a fairly steady rate from January to April, depending to some extent on weather conditions throughout the winter.

The rate of movement to market as indicated by carlot shipments is of interest to growers and dealers. The shipments up to any time in the season, considered along with the size of the crop, normal rate of movement, and market conditions, may give some idea of the supply remaining to be marketed.

The proportion of a season's carlot shipments moved to the end of any month varies considerably from year to year and among the different States (table 10). For 30 late-crop States as a whole, there is a light movement beginning in July and by the end of August, on the average, about 5 percent of the season's carlot shipments have moved.

The proportion of the season's shipments that have moved to the end of October is slightly more than one-fourth; to the end of November, about one-third; to the end of February, roughly two-thirds, and to the end of April, over nine-tenths (table 10).

TABLE 10.—*Proportion of crop-year carlot shipments of potatoes moved to the end of each month, leading late-crop States, and late-crop group as a whole, 1932–33 to 1935–36*

State and crop year	Production	Carlot shipments	Shipments moved to end of month											
			July [1]	August	September	October	November	December	January	February	March	April	May	June
	Million bushels	*Cars*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Maine:														
1932–33	40.5	44,043	----	0.3	4.2	10.8	19.0	28.5	41.2	54.7	71.6	84.8	95.8	99.9
1933–34	42.0	48,756	----	.8	7.2	17.6	27.0	36.1	49.9	62.1	75.5	86.5	96.2	99.8
1934–35	55.4	53,996	----	.3	3.4	15.7	26.2	34.9	47.7	63.7	76.1	87.3	94.8	99.0
1935–36	38.4	42,081	----	.1	3.3	12.8	21.8	31.0	45.3	61.9	79.3	91.4	98.3	100
Average	44.1	47,219	----	.4	4.5	14.4	23.8	32.8	46.2	60.8	75.6	87.4	96.1	99.6
Michigan:														
1932–33	30.3	9,946	----	1.8	7.8	17.5	25.1	34.5	47.1	57.2	69.0	81.3	94.5	99.9
1933–34	23.3	5,129	----	.6	4.9	14.9	26.4	35.2	46.5	55.0	66.4	78.7	91.6	99.8
1934–35	36.2	11,944	----	----	3.2	20.6	30.6	36.8	48.6	59.8	69.2	83.4	93.0	99.9
1935–36	28.1	7,009	----	.5	4.6	13.7	25.0	34.9	48.3	59.5	73.9	87.8	97.4	100
Average	29.5	8,507	----	.7	5.1	17.4	27.2	35.5	47.8	58.3	69.7	83.0	94.1	99.9
Wisconsin:														
1932–33	24.6	9,630	----	4.5	15.3	28.2	36.9	45.7	57.1	67.0	80.1	89.1	96.2	100
1933–34	18.6	5,218	----	5.6	16.4	27.1	36.2	45.8	58.0	68.3	81.1	89.2	95.6	99.9
1934–35	32.0	17,507	----	6.7	14.6	30.2	38.5	44.8	53.3	63.6	75.6	88.4	96.0	99.9
1935–36	23.5	5,939	----	15.1	32.3	41.3	46.8	52.1	60.9	71.2	84.0	93.0	98.3	100
Average	24.7	9,574	----	7.3	17.8	31.0	39.0	46.3	56.1	66.3	78.8	89.4	96.4	100
Minnesota:														
1932–33	29.6	14,362	0.3	5.0	19.5	27.5	31.5	34.4	40.4	52.1	84.2	95.2	98.9	100
1933–34	22.0	17,123	----	1.9	18.7	38.1	44.0	46.7	54.1	67.6	89.5	97.9	99.5	100
1934–35	20.5	8,237	----	1.2	10.2	27.2	30.7	31.7	34.9	56.2	88.7	98.0	99.8	100
1935–36	29.4	12,591	----	2.6	9.3	21.8	28.5	31.8	35.7	44.8	79.0	94.3	98.6	100
Average	25.4	13,078	.1	2.8	15.3	29.6	34.7	37.4	42.9	56.1	85.4	96.3	99.2	100
Colorado:														
1932–33	12.6	7,266	2.5	8.3	22.0	38.2	48.4	57.3	71.8	83.3	94.3	98.2	99.9	100
1933–34	14.7	12,395	.4	5.3	14.8	28.7	39.4	49.2	63.3	71.6	86.5	95.8	99.6	100
1934–35	7.8	3,265	9.4	24.0	38.9	55.6	65.8	74.1	86.8	92.7	95.8	99.4	100	100
1935–36	18.0	12,505	.6	3.1	11.6	27.8	36.4	46.2	61.8	79.4	90.6	98.0	99.9	100
Average	13.3	8,858	1.7	6.9	17.4	32.8	42.6	52.1	66.7	78.7	90.4	97.4	99.8	100

[1] Includes a few shipments in June for certain States and years.

TABLE 10.—*Proportion of crop-year carlot shipments of potatoes moved to the end of each month, leading late-crop States, and late-crop group as a whole, 1932–33 to 1935–36*—Continued

State and crop year	Production	Carlot shipments	Shipments moved to end of month											
			July	August	September	October	November	December	January	February	March	April	May	June
Idaho:	*Million bushels*	*Cars*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
1932–33	22.8	22,526	1.0	2.5	10.2	19.7	29.7	39.7	52.7	63.5	78.7	91.8	99.2	100
1933–34	25.5	30,066	.8	5.0	12.3	23.6	32.1	40.3	55.5	64.6	77.8	89.8	99.0	100
1934–35	23.9	26,639	3.5	10.4	21.9	34.3	43.0	51.5	63.9	73.6	84.9	94.9	98.8	100
1935–36	22.4	23,761	1.8	6.5	14.3	27.1	39.6	48.1	58.2	69.2	82.2	96.2	100	100
Average	23.6	25,748	1.8	6.2	14.8	26.3	36.1	44.9	57.7	67.8	80.9	93.0	99.2	100
30 late-crop States: [2]														
1932–33	313.4	140,049	.7	3.8	12.1	22.3	30.8	39.4	51.3	63.0	80.0	90.8	97.7	100
1933–34	286.9	164,780	.7	5.0	15.3	28.6	37.0	44.5	57.7	68.0	81.7	91.7	98.1	99.9
1934–35	337.2	159,931	1.4	5.8	13.6	27.2	36.5	44.1	58.7	68.7	81.4	91.5	96.9	99.6
1935–36	317.6	144,439	.7	4.4	11.6	24.7	34.5	42.4	54.1	67.4	83.9	94.6	99.0	100
Average	313.8	152,300	.9	4.8	13.2	25.9	34.8	42.7	54.9	66.9	81.7	92.1	97.9	99.9

[2] California late-crop but not early- and intermediate-crop shipments are included.

The rate of shipment varies with the volume and location of supply, the weather, market conditions, and possibly other factors. For the crop of 1932 only 39.4 of the season's shipments of late-crop potatoes from 30 States had been made to the end of December compared with 44.5 percent to the same date the following year.

The rate of shipment among the leading States varies considerably. On the average, about one-third of the Maine shipments have been made to the end of December compared with 46 percent for Wisconsin; 45 for Idaho, and slightly over 50 percent for Colorado. By the end of February, Maine has usually shipped about 60 percent, whereas Colorado has averaged nearly 80. About 93 percent of the Colorado season's shipments from the light crop of 1934 had been moved to the end of February, whereas less than 80 percent of the large crops of 1933 and 1935 had been moved to the end of February.

Competition among States and groups of States depends on marketing territory as well as time of shipment. Distribution of shipments and source of market supplies are discussed later.

DESCRIPTION OF IMPORTANT LATE-POTATO PRODUCING DISTRICTS AND HANDLING AND MARKETING PRACTICES

Although potatoes are grown on more than half of the approximately 3,000,000 farms in the 30 late-crop States, there are a number of districts or areas where the industry is highly concentrated. For a number of leading producing districts or States, a few important shipping points, principal marketing areas, and varieties, are shown in table 11. Brief descriptions of districts and practices in a number of leading late-crop States follow:

TABLE 11.—*Principal shipping points, varieties, and marketing areas of late-crop potatoes produced in specified districts or States*

Producing district or State	Important shipping points	Principal varieties or varietal groups	Principal marketing areas
Aroostook County, Maine.	Caribou, Fort Fairfield, Houlton, Presque Isle, Limestone.	Green Mountain, Cobbler	New England and Middle Atlantic States.
Long Island, N. Y.	Bridgehampton, Riverhead.	Cobbler, Green Mountain	New York City metropolitan area.
Western New York	Wayland, Andover, Gainesville.	Round white (mostly Rural group).	Western New York, Pennsylvania, Ohio, and the South.
Eastern Pennsylvania	Mostly moved from farm to market by truck.	Round white	Pennsylvania, New York City, Baltimore, and Washington.
Michigan	Greenville, Traverse City, Cedar City, Gaylord.	Lower Peninsula—Late Petosky (Russet Rural), Cobbler, Upper Peninsula—Green Mountain, entire State—Katahdin.	Ohio, Indiana, Michigan, Illinois, West Virginia, Kentucky.
Wisconsin	Antigo, Elderon, Waupaca.	Round white (Rural group).	Illinois, Wisconsin.
Minnesota and North Dakota.	Hollandale, Minn., Hawley, Minn., East Grand Forks, Minn., Ada, Minn., Hoople, N. Dak., Thompson, N. Dak.	Cobbler, Early Ohio, Triumph.	Illinois, Iowa, Missouri, Minnesota.
Western Nebraska	Hemingford, Mitchell, Scottsbluff.	Triumph	Nebraska, Kansas, Texas, Louisiana, Tennessee, Arkansas, Oklahoma.
Colorado	Monte Vista, Center, Carbondale, Eaton, Greeley, Montrose.	Red McClure, Brown Beauty, Rural group, Russet Burbank, People's (People's Russet), Triumph, Cobbler.	Colorado, Texas, Kansas, Oklahoma, New Mexico, Arizona, Missouri, Arkansas, Louisiana, Illinois, Tennessee.
Idaho	Idaho Falls, Pocatello, Burley, Buhl.	Russet Burbank, Bliss Triumph, Idaho Rural.	A large part of the United States; Chicago considered leading market.
Washington	Wapato, Toppenish	Russet Burbank	The Northwest.
Delta district, California.	Stockton, Middle River.	White Rose (sometimes called "Wisconsin Pride"), Burbank.	California.

AROOSTOOK COUNTY, MAINE

Maine potatoes are produced mostly in Aroostook County where about 90 percent of the farms grew potatoes in 1934, with an average of about 22 acres per farm in this crop. Leading shipping points include Caribou, Presque Isle, Houlton, Fort Fairfield, and Limestone. Green Mountain is by far the leading variety. The Irish Cobbler is important, chiefly for early fall shipment. The Katahdin and Chippewa, recently developed varieties, are grown in limited quantities.

Nearly half the certified seed grown in the United States is produced in Maine. Irish Cobbler, Green Mountain, and Spaulding No. 4, in the order named, are the leading varieties grown for seed.

Yields per acre are high and from 1926–35 averaged about 275 bushels. Potatoes are dug by machines, picked in baskets, and dumped into barrels in which they are hauled to storage or to a dealer for sale. Potatoes not intended for immediate shipment are generally stored in bins, field-run, either in trackside storage or on farms, and are not graded until just before they are shipped. Trackside storages have a capacity equal to 40 to 50 percent of production. Farm storage is in cellars, specially built storages, or temporarily in barns or sheds. Most shipments are sized to 1⅞ inch minimum although sizing practices vary with shippers and conditions. Most stock is packed to meet the quality specifications of U. S. No. 1 grade, but in some seasons the grade U. S. Commercial is used extensively. Very

few shipments of U. S. No. 2 are made. Probably 80 to 85 percent of the shipments of table stock are in 100-pound sacks and not over 5 percent in 15- and 10-pound sacks. Most of the small sacks are made of paper. The remaining shipments are mostly in bulk and go chiefly to New York and Boston. Formerly a large part of the shipments were in bulk. Seed potatoes are shipped in sacks of 165, 150, 120, and 100 pounds.

Selling to local dealers by growers is on a bulk per-barrel basis at the dealer's warehouse (fig. 11). The barrel is considered as holding 165 pounds and payment is often made on that basis. A common practice is to make settlement on the basis of the agreed grade, after the off-grade and undersized stock is taken out. In some instances

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FIGURE 11.—Potatoes are hauled from Maine farms in barrels to be sized and graded in buyers' warehouses.

field-run stock is purchased. Dealers sell mostly on a delivered at city destination basis. Recently there has been an increase in direct buying from farmers by city dealers.

A few brushing machines for cleaning potatoes are in use, and in 1936 some stock was washed by growers and shippers who used home-made devices. Practically all shipments are sized by machinery. Probably 98 percent of the sizing and grading is done by shippers, including grower-shippers. Potatoes that are sorted out in grading include those damaged from bruising, sunburn, scab, late blight, cuts, growth cracks, and freezing.

There are about 20 starch factories in the county. More than 5,000,000 bushels of potatoes have been used in the county in making starch in seasons of large crops and less than 1,000,000 bushels in short-crop years. The average for 1926–35 was slightly over 2,000,000 bushels.

The crop is marketed chiefly in New England and the Middle Atlantic States, although considerable quantities go into the South Atlantic, Gulf, and East North Central States. Local estimates are that less than 5 percent of the crop is trucked to market.

LONG ISLAND, N. Y.

The Long Island potato district is situated at the eastern end of the island, chiefly in Suffolk County. Riverhead, Bridgehampton, Southold, and Calverton are among the leading shipping points. There are two generally recognized districts in Suffolk County—the "north side" and the "south side". The north side produces the earlier crop and most of the Irish Cobbler variety grown in the county. The south side Green Mountains are generally brighter and usually sell at slightly higher prices than those from the north side.

Growers generally sell to local dealers who handle the stock through their warehouses, where it is machine-graded and sacked. Most of the potatoes are packed in 100-pound sacks, although some are put in 10- or 15-pound cotton or paper sacks, especially on orders of chain stores or other large retail organizations. Considerable quantities are hauled by farmers to the New York City farmers' markets in 50-, 60-, and 100-pound sacks.

The New York metropolitan area is the chief market outlet. Some early shipments go into New England and as far west as Chicago. There has been an increasing demand during the late fall from Florida, other Gulf States, Cuba, Puerto Rico, and Panama. Many of the shipments are made by motortruck. The crop movement begins in July, reaching a peak in August and September and continuing until the following spring.

WESTERN NEW YORK

Among the important loading points in the western New York potato district are Wayland, Arkport, Gainesville, Cohocton, Hornell, and Batavia. Potatoes of the Rural group are the most important and comprise most of the production in the upland districts. In the muck lands potatoes of the Cobbler group are generally grown. The Green Mountain variety is grown in several localities. Potatoes are dug by machine, picked up by hand, and hauled in field crates to the farmer's storage or loading station. Most of the crop is stored by the growers in cellars and small storage houses on the farms.

A number of cleaning machines are in use, most of them being of the brush and cloth-wiper type. Recently a cleaning and sizing machine in the construction of which sponge rubber is used, has been introduced. Nearly all the shipments are sized by machinery of various types. Probably 60 to 65 percent of this work is done by dealers and 35 to 40 percent by growers.

Most potatoes are sorted to meet the size requirements of U. S. No. 1 grade. Practically all carlot shipments are in 100-pound sacks. A very few 15-pound sacks are used and a few shipments of certified seed are made in 120-pound sacks. Second-hand sacks holding about 60 pounds are often used for local sales.

A large part of the crop is sold by farmers to truckers or disposed of on the local markets. The remainder of the commercial crop is sold to shippers who store or pack the stock for shipment, mostly by rail. Most of the carloads are sold on a delivered basis. No starch factories operate in western New York.

Principal markets for rail shipments are Pittsburgh, Cleveland, Baltimore, and Washington. Smaller cities in Pennsylvania, Ohio, and south to the Carolinas and Tennessee, are important outlets. Very few shipments go to New York City, Newark, or Philadelphia. There is a large motortruck movement to cities and towns in western New York, and a considerable movement to Pennsylvania, Ohio, and West Virginia.

EASTERN PENNSYLVANIA

Most of the commercial crop of potatoes in Pennsylvania is grown in the southeastern part of the State. The leading district is in Lehigh County. The potatoes are chiefly of the Rural and Green Mountain groups and are sold as round whites. The potatoes are sized by machine and the worst of the defective stock is picked out. Some shipments are graded to meet the United States standards. The 100-pound sack is generally used, but some are packed in 15- and 60-pound sacks.

Local dealers or traveling buyers and truckers buy most of the potatoes from the growers. A very large part of the movement to market is by truck to Philadelphia, Baltimore, Pittsburgh, and New York, and the many smaller cities in this region.

MICHIGAN

Among the most important potato-producing counties in Michigan are Montcalm, Lapeer, Kent, and Oakland. The leading variety in the Lower Peninsula is the Late Petoskey, marketed as the Russet Rural, with the Irish Cobbler second and comprising perhaps 10 to 15 percent of the crop. The Green Mountain is the leading variety in the Upper Peninsula. The recently introduced Katahdin variety is becoming popular throughout the State and roughly 1,000,000 bushels were grown in 1936. Yields have averaged near 100 bushels per acre. Potatoes are dug by both hand fork and machine with the former method predominating. Storage in pits, sheds, and cellars on the farms have increased with the increase in motortruck marketing. Many potatoes are stored in warehouses along the railroads.

A large part of the shipments are graded and sized by machinery in the shippers' warehouses. Practically no cleaning machines are in use. Stock sold direct from the farms is mostly sized over home-made screens or on machines. Under Michigan law all shipments are required to be graded according to United States standards. The 100-pound sack is in general use with an occasional shipment in 15-pound sacks or bulk.

Carload sales are generally based on a delivered price minus transportation charges. Sales to truckers are generally for cash. Independent dealers with privately owned warehouses operate at various points. Numerous federated local cooperatives sell through the Michigan Potato Growers' Exchange. Very few Michigan potatoes are used in making starch or other byproducts.

Principal outlets for rail shipments are Chicago, St. Louis, and markets in Michigan, Ohio, Indiana, West Virginia, and Kentucky. Roughly from 50 to 65 percent of the movement to market of the 1935 Michigan crop was by truck. Most of the truck movement was to points in Michigan and the northern parts of Ohio and Indiana, although some truck shipments went to points much farther away.

WISCONSIN

Potatoes are grown commercially in five generally recognized districts in Wisconsin as follows: Waupaca-Waushara, Rice Lake, Antigo, Rhinelander, and Marinette. Most of the Wisconsin potatoes belong to the Rural group and are marketed as round whites. Yields average about 100 bushels per acre, and 5 to 10 acres per farm is common. In general, only the large growers use machines in digging.

Nearly all sales by growers are for cash in bulk, by the truckload at the dealer's warehouse, or in the grower's cellar. Most storage is in farmers' cellars. Dealers grade the stock in their warehouses or in the growers' cellars. Practically all shipments are sized by machines. Both hand and power machines are used. Under State law all shipments must be marked to show the United States grade. The 100-pound sack is used almost exclusively in shipping.

Chicago is the chief market. Other Illinois and Wisconsin cities are important outlets and in some seasons considerable quantities are shipped to markets in Iowa, Missouri, Tennessee, and Indiana. Sales by dealers are made both on a delivered and on an f. o. b. basis. Probably about 40 percent of the movement of the 1935 crop was by motortruck, mainly to markets within the State. Several starch factories that formerly operated in Wisconsin have been dismantled.

MINNESOTA AND NORTH DAKOTA

Among the important shipping points in the Red River Valley are Hawley, Moorhead, East Grand Forks, Ada, and Kennedy, in Minnesota, and Hoople, Thompson, Crystal, and Hatton, in North Dakota. Potatoes are grown commercially in several other districts in Minnesota, including the Arrowhead, Sandland, Hollandale, and the Hennepin and Ramsey County districts. Probably over half of the Minnesota crop is of the Cobbler group, about one-fifth of the Early Ohio group, and less than one-fifth of the Triumph group. A number of other varieties are grown commercially. In the Red River Valley including parts of both Minnesota and North Dakota, roughly 60 percent is of the Cobbler group, and 20 percent each of the Early Ohio and Triumph groups.

Mechanical diggers are in general use. The potatoes are then picked up and placed in wire or wood-slatted baskets. Very little grading is done in the fields, most of it being done in warehouses. Most of the storage is in warehouses or root cellars, but some shippers report that the use of cold storage is increasing as it facilitates obtaining loans on the crop. Machines for washing potatoes are used to some extent in the Red River Valley. Some brushing machines are used. About 75 to 80 percent of the shipments are sized and graded by dealers, and 20 to 25 percent by growers or grower-shippers. All stock graded by dealers and most of that graded by growers is sized by machinery.

Sales by shippers are generally on a delivered basis. The manufacture of potato chips is the only byproduct industry.

Potatoes from Minnesota have a rather wide distribution, but go mainly to nearby States west of the Mississippi River and to Illinois. Perhaps 10 to 15 percent of the movement from the Red River Valley is by truck. In other Minnesota districts the proportion moved by truck is larger.

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COLORADO

There are three principal potato-producing districts in Colorado—the San Luis Valley, northern Colorado, and western Colorado.

The San Luis Valley has the largest output, usually supplying about 60 percent of the State's shipments. Leading shipping points in this district include Monte Vista, Center, and Del Norte. Red McClure, the leading variety, comprises about two-thirds of the shipments. Brown Beauty is the second variety in importance. Harvesting of the late crop begins about September 15.

Greeley is the center of the northern Colorado district, which usually produces about one-fifth of the State's shipments. The main crop, which usually begins to move about September 1, consists of potatoes of the Rural and Pearl groups. Some Irish Cobbler and Triumph potatoes are grown for shipment in July and August.

In western Colorado, production centers around the Carbondale-New Castle and Delta-Montrose districts. Late-crop varieties include People's (People's Russet), Russet Burbank, Late Petoskey (Rural Russet), and Red McClure.

A large part of the late crop is placed in farm storages. In the San Luis Valley most stock is stored in 100-pound sacks and in the other districts in bulk.

Machines for washing potatoes are used to a considerable extent in the San Luis Valley. Practically all shipments are sized by machinery, many of these sizers being operated by hand. Part of the sizing and grading is done by dealers and part by growers. Colorado potatoes are generally packed and sold on the basis of United States grades. A large part of the shipments are in new even-weight 100-pound sacks. Sales by growers are generally for cash in truckloads or carloads. Practically all shippers sell on a delivered basis. A large volume of shipments is handled by the Potato Grower's Exchange. Principal outlets for carload shipments are in Colorado, Illinois, Texas, Kansas, Oklahoma, and Missouri. Slightly less than one-fifth of the Colorado shipments in 1936–37 moved by truck mostly to markets in Colorado, Kansas, Oklahoma, New Mexico, and Texas.

IDAHO

Most of the Idaho commercial potato crop is grown in the southern part of the State. There are three leading districts—Nampa-Caldwell, Twin Falls-Burley, and Idaho Falls. From 5 to 7 acres of potatoes per farm, on the average, are grown on 15,000 to 20,000 farms. Practically all the table stock is grown under irrigation, but much of the seed stock is grown without irrigation. The average yield per acre is about 200 bushels.

Approximately 90 percent of the production is of the Russet Burbank variety. Bliss Triumph is second in importance and the Idaho Rural third. Early varieties are first ready for market in July. The Russet Burbank movement usually begins in August and continues through the year until June.

Power or horse-drawn diggers are used in harvesting. A common practice is for the pickers to fill bags about half full in the field and to haul them to warehouses or cellars for sorting. When grading is done in the field the potatoes are picked up in wire baskets and dumped onto a shaker sorter which is moved about in the field. Most of the crop is taken from the field to large cellars on the farms

or along the tracks for sorting through the shipping season. Brushing and washing is practiced only to a limited degree and by comparatively few shippers. The washing of early-season shipments has been very satisfactory. Perhaps not more than 10 percent of the total shipments are cleaned either by brushing or washing. Most of the shipments except those sold direct from the fields are graded over machines. The sizing and the sorting out of defects is performed by hand as the potatoes move along a roller conveyor or conveyor belt. Probably 85 percent of the shipments are graded and sized by dealers or contract crews hired by them, and 15 percent by growers. The grading crews often work in the storages or cellars of the growers. Potatoes are graded according to United States standards. During the 1935–36 season approximately 65 percent of the shipments graded U. S. No. 1 and 30 percent graded U. S. No. 2. Size is of major importance in grading Idaho potatoes. Special packs of specified sizes or certain minimum sizes are often shipped. Practically all shipments are inspected under the Federal-State service. About 90 percent of the shipments are packed in 100-pound burlap bags. Small bags of 10-, 15-, 25-, and 50-pounds capacity are also used. Of these the 10- and 15-pound sizes are most popular. Many of these are made of cotton cloth or open-mesh materials. Some fancy wrapped stock is packed in boxes of the size of the northwestern apple box. Most shipments in 100-pound bags are the so-called "open-mug" pack in which large potatoes are exposed to view under the lacing at the mouth of the sack.

A common type of transaction between grower and local dealer is for the dealer to buy bulk stock in the grower's field or cellar. Payment is at a specified price per 100 pounds for each grade. Occasionally a crop is sold at a flat price without regard to grade or pack-out.

Many carload sales by shippers are for cash f. o. b. shipping points. Buyers include buying brokers, trade representatives, and independent buyers. Ordinarily, relatively few shipments are consigned.

Idaho shipments of early-maturing potatoes in July are frequently made under refrigeration. Later in the season they are shipped under standard ventilation. Shipments in the winter are usually under Carriers' Protective Service, but shipments to California or southern points in the winter are often in cars that are preheated and papered, and are not under Carriers' Protective Service.

Idaho potatoes are widely distributed throughout the United States. Leading markets include Chicago, St. Louis, Kansas City, Los Angeles, New York, and Philadelphia. Principal markets for Idaho Rurals are in Texas and Oklahoma. Roughly, about 5 percent of the movement is by truck, going mostly to Utah, California, and other nearby States

WASHINGTON

A large part of the commercial crop of potatoes in Washington is produced in the south-central part of the State. The lower Yakima Valley is the leading district. Important shipping points are Harrah, Brownstown, Toppenish, and Wapato. There is also an important district centering around Ellensburg in the upper Yakima Valley locally known as the Kittitas Valley.

The Russet Burbank variety is grown almost exclusively for the main crop and the Irish Cobbler as an early crop. Stocks of late-crop potatoes not sold at digging time are stored in pits and cellars on the farms or in trackside storages.

Most of the sales by growers are on a ton basis. Ordinarily the potatoes are hauled to the dealer's warehouses at the railroad in field sacks where they are run over grading machines and packed in new sacks holding 25, 50, or 100 pounds. Payment is made on the quantity of the agreed grade actually packed. United States grades are the basis for most sales. Practically all of the stock shipped during the summer months and much of that shipped during the fall and winter is washed before grading and sacking.

Probably two-thirds to three-fourths of the season's shipments in the Yakima district are washed, the washing equipment being nearly all owned and used by dealers. Ninety percent or more of the shipments are graded and sized by dealers or by professional grading crews under dealer supervision. All shipments are sorted over a machine or table having a conveyor over which the potatoes move. Some of these sorting machines are made locally. The work of sizing as well as picking out defective stock is performed by hand as the potatoes move along the belt. A few shippers have a short section of wire belting with openings 1⅞ or 2 inches in diameter, over which the potatoes pass before reaching the conveyor belt, thus removing the small potatoes.

Considerable quantities are sold to cash buyers. The principal market outlet for Washington potatoes is in the Northwest, although some shipments go to Chicago and eastern and southern markets.

CALIFORNIA

The leading late-potato district in California is known as the delta district and is in the delta of the Sacramento and San Joaquin Rivers. Approximately 12,000 to 15,000 acres are used for potato production in this district. Potatoes of the long white type are grown. The White Rose is the leading variety, followed by the Burbank group.

Practically all potatoes shipped from the delta district are cleaned by brushing or washing machines. A type of machine in general use is one in which the potatoes are run over revolving brushes. If washing is to be done a spray of water is turned on the potatoes as they are being brushed. It is estimated that approximately 90 percent of the potatoes are prepared for shipment by the growers, the remainder being graded at public warehouses after periods of storage. Ordinarily screens of 1⅞ inch mesh are used in connection with the brushing and washing machines, for removal of small potatoes. If it is desired to pack separately the large potatoes known to the local trade as "bakers", they are picked out by hand during the grading process.

Growers usually sell by the 100-pound sack delivered at the riverbank. The shipments go by boat to Stockton, Antioch, San Francisco, and other rail points for reshipment or market. San Francisco and Los Angeles are the principal consuming markets. Nearby States also receive some shipments.

DISTRIBUTION OF RAIL, BOAT, AND MOTORTRUCK SHIPMENTS AND SOURCE OF MARKET SUPPLIES

A good idea of the marketing territory for potatoes from the late-crop producing areas can be obtained from the records of unloads in leading markets throughout the United States. The 1936 rail and boat unloads in 30 representative markets, with the proportion of

late-crop supplies originating in specific States, are shown in table 12. Motortruck receipts in eight cities by States or districts of origin in 1935 and 1936 are shown in table 13.

TABLE 12.—*Carlot and boat unloads of potatoes at 30 markets; late-crop unloads by leading States of origin, calendar year 1936*

Market	Total unloads	Unloads from 30 late-crop States													
		30 States	Maine	New York	Michigan	Wisconsin	Minnesota	North Dakota	Nebraska	Colorado	Idaho	California [1]	Washington	Others	Total
	Cars	*Cars*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*
Boston	6,809	5,075	99.4	0.1	----	----	----	----	----	----	0.5	----	----	----	100.0
New York	14,784	10,599	88.2	5.8	0.4	(2)	(2)	----	----	(2)	4.9	0.6	(2)	0.1	100.0
Philadelphia	5,698	3,482	84.4	3.3	.6	0.2	(2)	----	----	----	6.6	2.7	----	2.2	100.0
Baltimore	2,344	1,490	82.5	14.8	.2	----	----	----	----	----	.9	.1	----	1.5	100.0
Washington	1,132	904	57.0	27.0	1.1	.1	----	----	----	----	10.5	----	----	4.3	100.0
Pittsburgh	3,949	1,665	65.3	6.2	9.8	.3	0.7	0.5	0.1	3.4	4.6	6.9	0.1	2.1	100.0
Cleveland	2,529	1,059	38.7	6.9	8.0	1.5	.7	.7	----	1.6	25.0	15.0	----	1.9	100.0
Detroit	4,068	2,071	26.8	7.1	28.7	.2	.5	.5	.2	4.1	20.6	10.1	.1	1.1	100.0
Cincinnati	3,540	2,421	7.9	2.6	23.6	1.4	8.2	4.4	10.5	6.5	28.0	3.5	.2	3.2	100.0
Indianapolis	1,896	1,057	7.9	3.1	34.7	8.5	6.7	7.0	.8	4.1	18.5	3.3	.1	5.3	100.0
Chicago	15,964	12,064	.3	.3	5.4	12.6	4.0	3.8	3.4	21.4	36.4	6.3	2.5	3.6	100.0
Milwaukee	1,959	1,272	----	.2	.3	17.2	1.3	1.1	3.1	9.5	48.5	16.2	.9	1.7	100.0
Minneapolis	1,635	1,497	----	----	.2	.3	6.4	2.9	.7	.8	22.4	21.6	42.4	2.3	100.0
Omaha	1,400	1,211	----	----	----	.1	6.4	6.4	23.9	13.3	38.1	7.4	.6	3.8	100.0
Kansas City	3,614	3,203	----	----	----	.4	9.0	5.3	11.0	31.0	37.1	2.5	.1	3.6	100.0
St. Louis	5,496	4,508	.5	.1	2.7	6.2	14.5	6.3	16.1	16.3	28.7	3.7	.8	4.1	100.0
Atlanta	1,164	603	52.2	1.2	4.6	13.3	1.0	.8	.2	23.9	2.5	----	----	.3	100.0
Jacksonville	686	470	79.1	16.4	----	----	----	----	.9	.4	3.2	----	----	----	100.0
Birmingham	753	524	5.5	5.7	1.2	13.2	9.7	1.7	9.7	49.6	1.2	.6	----	1.9	100.0
Nashville	1,118	840	.8	3.8	5.5	19.6	16.1	4.4	----	30.1	11.9	4.2	.1	3.5	100.0
Louisville	1,312	797	7.2	2.4	52.9	12.3	6.5	2.6	----	4.9	6.5	1.9	----	2.8	100.0
Memphis	999	848	----	.1	.4	8.6	5.1	5.1	32.7	17.6	16.7	.9	.1	12.7	100.0
New Orleans	980	857	19.3	8.6	----	.1	2.9	.9	4.2	42.6	9.0	11.3	----	1.1	100.0
Dallas	1,210	1,132	.2	----	----	.1	.3	.9	8.8	14.6	40.7	28.8	.1	5.5	100.0
San Antonio	891	885	1.4	----	----	.2	1.1	4.3	.1	45.4	17.3	28.6	----	1.6	100.0
Oklahoma City	1,169	1,115	----	----	----	.1	4.0	.5	12.1	11.4	63.4	2.7	.4	5.4	100.0
Denver	727	671	----	----	----	----	.1	.1	----	65.3	5.1	27.3	1.2	.9	100.0
Los Angeles	5,449	5,428	----	----	----	----	----	----	----	----	33.2	54.0	.1	12.7	100.0
San Francisco	3,390	3,345	----	----	----	----	----	(1)	.1	----	10.0	53.4	4.5	32.0	100.0
Seattle	854	792	----	----	----	----	----	.1	----	----	2.7	18.3	77.4	1.5	100.0
Total	97,519	71,885	31.2	2.6	4.4	3.7	3.2	2.0	3.7	10.2	20.5	11.4	2.5	4.6	100.0

[1] Includes early-crop shipments.
[2] Less than 0.05 percent.

The two States shipping the largest quantities of potatoes, Maine in the East, and Idaho in the West, move their products great distances to market. Higher yields and higher prices in the city markets than for stock from some other States are factors which tend to compensate for the higher transportation costs.

Although production in the 12 late-crop States not classed as surplus-producing States averaged over 40,000,000 bushels in 1932–36, the carlot shipments averaged less than 1,000 cars. Most of these States are thickly populated and the movement to market is chiefly by truck. This is also the case in Pennsylvania which is classed as a surplus-producing State.

In general, cities receive a large part of their late-crop potatoes from nearby shipping districts, but considerable quantities, particularly of the higher quality stock, are brought in from long distances (tables 12 and 13). Over 99 percent of the Boston carlot and boat receipts of late potatoes came from Maine in 1936. The motortruck receipts were about 14 percent of the total and came mostly from nearby

points not over 75 miles distant. Chicago carlot supplies came from a large number of States, the principal ones being Idaho, Colorado, and Wisconsin.

TABLE 13.—*Reported motortruck receipts of potatoes at specified markets by State or district of origin, 1935 and 1936*

Market and origin of shipment	1935	1936
Atlanta:	*Carlots*	*Carlots*
Indiana	2	6
Maine		1
Michigan	110	65
Ohio	2	6
Pennsylvania	1	
Wisconsin	9	7
Total	124	85
Other States	318	300
Total	442	385
Boston:		
Nearby	462	650
Connecticut		1
Maine	74	152
Massachusetts	1	
New Hampshire	14	18
New York	1	
Vermont	2	
Total	554	821
Kansas City:		
Mostly Kansas and Missouri	393	191
Los Angeles:		
California [1]	2,614	2,388
Idaho	27	33
Nevada	16	11
Oregon	24	
Utah	50	54
Total [1]	2,731	2,486
New York City:	*Carlots*	*Carlots*
Connecticut	37	36
Maine		2
New York [1]	6,670	6,715
Pennsylvania	5	5
Total [1]	6,712	6,758
Other States	1,188	740
Total	7,900	7,498
Philadelphia:		
New York	(2)	6
Pennsylvania	(2)	2,155
Total	(2)	2,161
Other States	(2)	2,235
Total	(2)	4,396
St. Louis:		
Mostly Missouri	159	245
San Francisco:		
California	265	235
Oregon	1	1
Total	266	236

[1] Includes considerable quantities of intermediate-crop potatoes.
[2] Figures not available.

The proportion of the total rail and boat unloads coming from late-crop States varies widely among the markets. Records for 1932–36 in 36 cities show that the rail and boat unloads from late-crop States averaged only 12 percent of the total in Buffalo and 44 percent in Cleveland, compared with 83 percent in Minneapolis, 86 percent in Kansas City, and more than 95 percent in Pacific coast cities (table 14). Low percentages are generally explained by the fact that truck receipts from nearby late-crop districts are heavy. In the Pacific Coast States large quantities of early- or intermediate-crop potatoes are produced, although the States are classed as late-crop States, which accounts for the high percentage of receipts from so-called late-crop States. For the 36 cities, 72 percent of the rail and boat unloads were from late-crop States in the period 1932–36. Principal sources of late-crop supply in the 36 markets and leading varieties in the supply are listed in table 14.

Data for leading markets indicate in general that over 90 percent of the motortruck receipts of late potatoes are from points not more than 125 miles distant.

TABLE 14.—*Carlot and boat unloads of potatoes, proportion from late-crop States, principal sources of and varieties in late-crop supply, 36 cities, calendar years, average 1932–36*

City	Carlot and boat unloads		Principal sources of supply	Leading varieties or types
	From all sources	Proportion from 30 late-crop States		
	Cars	*Percent*		
Atlanta	934	63	Maine, New York, Michigan, Colorado, Wisconsin.	Green Mountain, other round whites, Brown Beauty.
Baltimore	2,510	63	Maine, Pennsylvania, New York.	Green Mountain, round white.
Birmingham	578	75	Colorado, Maine, New York, Wisconsin.	Round white.
Boston	7,445	75	Maine, Massachusetts, Canada.	Green Mountain, Irish Cobbler.
Buffalo	861	12	New York	Round white.
Chicago	14,777	75	Wisconsin, Idaho, Colorado, Minnesota, North Dakota, Michigan.	Round white, Russet Burbank, Russet Rural, Red McClure, Green Mountain, Early Ohio.
Cincinnati	3,422	68	Michigan, Idaho, Wisconsin, Minnesota, North Dakota, Maine, Nebraska.	Russet Burbank, Early Ohio, round white.
Cleveland	2,660	44	Maine, Idaho, Ohio, New York, Pennsylvania, Michigan.	Green Mountain, Russet Burbank, round white, Russet Rural.
Columbus	1,373	59	Michigan, Minnesota, North Dakota, Idaho.	Russet Rural, Early Ohio, Russet Burbank.
Dallas	1,075	93	Idaho, Colorado, California	Russet Burbank, Burbank, Red McClure.
Denver	784	91	Colorado, Idaho	Rurals, Russet Burbank, Red McClure, Triumph.
Detroit	3,542	44	Michigan, Idaho, Maine	Russet Rural, Russet Burbank, Green Mountain.
Fort Worth	651	84	Idaho, Colorado, California	Russet Burbank, Burbank, Red McClure, Rural group.
Indianapolis	1,795	62	Michigan, Minnesota, Wisconsin, Idaho.	Round white, Russet Burbank.
Kansas City	3,188	86	Idaho, Minnesota, North Dakota, Nebraska, Colorado.	Russet Burbank, Early Ohio, Triumph, Red McClure.
Los Angeles	5,936	100	California, Idaho, Oregon	White Rose, Burbank, Russet Burbank.
Louisville	1,028	64	Michigan, Minnesota, Wisconsin, Idaho.	Round white, Russet Burbank.
Memphis	930	84	Nebraska, Wyoming, Idaho, Colorado.	Triumph, Russet Burbank, Red McClure.
Milwaukee	1,785	61	Wisconsin, Idaho	Round white, Russet Burbank.
Minneapolis	1,021	83	Minnesota, North Dakota, Idaho, Washington.	Russet Burbank, Irish Cobbler, Triumph, Early Ohio.
Newark	3,615	56	Maine, New York, Canada	Green Mountain, round white.
New Orleans	951	84	Colorado, Maine, Idaho	Brown Beauty, Green Mountain, Russet Burbank.
New York	17,267	71	Maine, Long Island, N. Y., Idaho.	Green Mountain, Irish Cobbler, Russet Burbank.
Omaha	1,211	82	Idaho, Nebraska, North Dakota, Minnesota, Colorado.	Triumph, Russet Burbank, Red McClure, Irish Cobbler.
Philadelphia	5,960	61	Maine, Pennsylvania, Idaho	Round white, Russet Burbank.
Pittsburgh	3,599	47	Maine, New York, Pennsylvania, Idaho.	Green Mountain, round white, Russet Rural.
Portland, Oregon	713	97	Oregon, Washington	Russet Burbank, Burbank.
Providence	1,051	84	Maine	Green Mountain.
St. Louis	5,488	80	Idaho, Nebraska, Michigan, Minnesota, Colorado.	Russet Burbank, Triumph, round white.
St. Paul	426	85	Minnesota, North Dakota, Idaho, Washington.	Round white, Russet Burbank.
Salt Lake City	60	93	Idaho, California	Russet Burbank.
San Francisco	3,573	99	California, Oregon, Washington, Idaho.	Long white varieties.
Seattle	1,240	97	Washington	Russet Burbank.
Spokane	142	99	do	Do.
Toledo	715	49	Michigan, Idaho	Russet Rural, Russet Burbank.
Washington	1,417	71	Maine, New York, Pennsylvania.	Green Mountain, round white.
Total or average	103,723	72		

METHODS OF SALE AND DISTRIBUTION IN CITY MARKETS

The mothods of handling and distributing potatoes in the large city markets are somewhat different from those used for many other vegetable crops. Late-crop potatoes are used in larger quantities, are less perishable, and are subject to smaller price fluctuations from day to day than is true of many other vegetables. Carlot receipts of potatoes are often sold directly from the cars, on sidings or in railroad yards, to jobbers, peddlers, or large retailers. Large quantities are moved through the customary trade channels, that is, from carlot receiver to jobber to retailer (fig. 12). Some of the smaller dealers or jobbers who cannot handle a full carload of most commodities often buy carloads of potatoes.

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FIGURE 12.—These potatoes are stacked in a well-constructed city market warehouse with rail facilities, awaiting sale to jobbers or other buyers in lots of 1 to 10 sacks or more.

Considerable trucking within the cities is necessary in moving potatoes from wholesaler to retailer. Some of this intracity movement is on trucks of wholesalers and jobbers, some on hired trucks, and some on retailers' trucks. One or two hauls, and occasionally three, are necessary in moving potatoes from rail yards or docks to the retail stores. Trucking rates vary among the cities. For hauls up to about 5 miles the charge is often 5 to 10 cents per 100 pounds.

Many carlot sales of potatoes are handled through city brokers who act for the country shipper in finding a city wholesaler, jobber, or large retailer who wishes to buy a car. Brokerage charges paid by the shippers on carlot sales usually range from $10 to $20 per car. City dealers buy in various ways including "delivered" and f. o. b. shipping point. Many city firms have their own buyers in the producing areas. Some stock is received on consignment, particularly in periods of heavy

supply. The commission charged shippers on consignments is usually from 7 to 10 percent. Chain stores buy large quantities of potatoes at shipping point for shipment by rail or truck direct to their city warehouses. Truck receipts of late-crop potatoes are important and are handled through jobbers, direct to retailers, and by peddlers.

The Perishable Agricultural Commodities Act, a Federal statute, was enacted to suppress unfair and fraudulent practices in the marketing of fresh fruits and vegetables which includes potatoes, handled in interstate or foreign commerce. All commission merchants, dealers, and brokers engaged in such business are required to be licensed by the Secretary of Agriculture, the annual fee being $10. The unfair practices prohibited consist of rejection of produce or failure to deliver in accordance with the terms of a contract, without reasonable cause; dumping or destroying of consigned produce without reasonable cause; making false and misleading statements for a fraudulent purpose in connection with any transaction; fraudulent accounting for consigned goods; failure to pay for purchased goods; making fraudulent representations as to the State or country in which the commodity was produced, and fraudulent removal or alteration of any card, tag, or notice placed on any container or railroad car containing a certificate of a Federal or State inspector as to the grade or quality of the commodity or the State or country in which the commodity was produced. Upon receipt of complaints the United States Department of Agriculture will make necessary investigations and, if the evidence is sufficient, will issue orders requiring the payment of damages and take such disciplinary action against the parties licensed as the facts may warrant. Complaints may be filed by wire or by letter. This service, without charge, is for the protection of growers as well as those licensed under the act.

FUTURES TRADING IN POTATOES

On September 13, 1936, the Chicago Mercantile Exchange was designated a contract market to deal in potato futures under the provisions of the Commodity Exchange Act, approved June 15, 1936. Trading in potato futures has been conducted on that exchange in certain periods since 1931.

Rules of this exchange provide that potatoes for Chicago delivery under futures contracts must be on track at specified places, or in a cold-storage warehouse in the city that is approved by the exchange, and must be Government inspected. The trading unit is the carlot of 360 uniform new burlap bags, all branded alike. Transactions are on the basis of U. S. No. 1 grade, size A, or U. S. Extra No. 1 grade. Minimum price fluctuation in futures contracts is 1 cent per 100 pounds, or $3.60 per carlot. The commission charged for the "round turn" of buying and selling or selling and buying a carload as stated by the exchange in October 1936, was $10 plus a clearance fee and Government tax, making a total charge of about $11.50. Rules of the exchange also specify margin requirements on a futures-contract transaction and other regulations relating to weight variations, through freight rates, time of delivery, etc.

Exchange contracts provide for delivery which is made by the transfer of the bill of lading or warehouse receipt; however, actual delivery is not necessarily made under future contracts, and in fact, in a large majority of the transactions is not made.

Transactions in futures trading can be used in hedging by growers or dealers under certain conditions, thus tending to safeguard profits or prevent losses which might result from price changes in the cash market for potatoes.

Hedging, as the term is used in the grain trade, is [a transaction] to offset an ownership or contractural risk, arising in connection with the growing or the handling or utilization of actual grain, by the assumption in the futures market of an opposite kind of risk as nearly as possible, the expected effect being that any price change in the cash grain market producing one result will be offset and compensated for by a change of equal size made in the futures market producing a directly opposite result.[6]

Transactions involving approximately 2,500 cars of potatoes occurred on the futures market of the Chicago Mercantile Exchange in 1936. This quantity is relatively small in proportion to the total receipts in Chicago. Futures trading during the early part of 1937 was in considerably larger volume than during the corresponding period of 1936. Prices on the futures market are theoretically a barometer of supply and demand conditions which will prevail during the coming months. As the delivery month approaches, price changes in futures contracts reflect the opinions of the buyers and sellers as to what the price of potatoes will be in the delivery month (table 15).

TABLE 15.—*Approximate range in prices of future-delivery contracts on the Chicago Mercantile Exchange, for carlots of Idaho Russet Burbank potatoes, specified grades, per 100 pounds, sacked, at Chicago, 1936–37* [1]

Month of sale	October 1936 delivery, exchange grade No. 1	January 1937 delivery, exchange grade No. 1	March 1937 delivery	
			U. S. No. 1, size A	U. S. Extra No. 1
July 1936	$1.96–$2.30	$2.10–$2.67		
August 1936	1.85– 2.30	2.30– 2.65		
September 1936	1.85– 2.15	2.25– 2.57		
October 1936	1.90– 2.50	2.38– 2.99		
November 1936		2.80– 3.05		$3.20–$3.47
December 1936		2.65– 2.93	$3.08–$3.35	3.37– 3.65
January 1937		2.85– 3.35	3.36– 3.80	3.70– 4.20
February 1937			3.24– 3.70	3.46– 4.00
March 1937			2.97– 3.40	3.15– 3.60

[1] Prices as reported in the Tabb Potato Service.

Generally the cash price on comparable grades for carlots on track in Chicago is slightly higher than the current-month delivery price on the futures market. One reason for this is that buyers like to see the potatoes before making a purchase. For the few months in which a comparison of prices of U. S. No. 1 grade, size A, and U. S. Extra No. 1 was possible, the U. S. Extra No. 1 frequently sold at 5 to 10 percent higher prices than the U. S. No. 1, size A (table 15).

DISTRIBUTION FROM CITY MARKETS BY MOTORTRUCK

Motortruck distribution of potatoes from the larger city markets is perhaps relatively less important than for many other vegetables and fruits. This is largely due to the fact that potatoes are available locally in many districts. Late potatoes are less perishable than many other vegetables and can be used in carload lots in some small

[6] MEHL, J. M. HEDGING IN GRAIN FUTURES. U. S. Dept. Agr., Cir. 151: 95. 1931.

markets that cannot handle carloads of other more perishable vegetables.

However, considerable quantities of potatoes are distributed from the large city markets. This is especially true of certain varieties from certain States such as the Idaho Russet Burbank, Colorado Red McClure, and Maine Green Mountain.

It is a common practice for dealers in the smaller cities and towns to send their own trucks to the large markets regularly to obtain supplies. It is customary for dealers in some markets to deliver supplies throughout the adjoining trade territory. Chain stores move large quantities of potatoes by truck throughout the territory in which they operate. A large part of the redistribution from the larger city markets is within a radius of from 50 to 100 miles.

DESCRIPTION OF CITY POTATO MARKETS

Potato-marketing conditions, practices, and facilities vary considerably among the markets. Sources of supply and varieties differ (table 14). Some cities are important carlot markets, others are not. The extent of intracity trucking necessary in distribution varies. A description of marketing practices and conditions in a number of leading cities follows.

BOSTON

Maine is the leading source of supply for Boston, although nearby stock, chiefly from the Connecticut Valley, has become increasingly important in recent years. Most of the nearby stock is received in the late summer and fall, and offers strong competition to Maine stock during this period. A few shipments are received from other New England States and from Canada.

The principal potato market in the city is the Boston & Maine Produce Market in the Charlestown district. Cars are unloaded directly into the stores. The principal jobbing district is the Faneuil Hall market, known as the "street". Practically all motor truck receipts as well as some supplies from the Charlestown Market are sold here. Considerable quantities of potatoes are received at the Market Terminal, and during periods of heavy boat receipts, Canadian stock is sold on the docks.

The Green Mountain variety usually sells at about 5 cents per 100 pounds higher than the Irish Cobbler when both are on the market. The Katahdin, when available, has usually sold at 5 to 10 cents higher per 100 pounds than the Green Mountain. Red stock is not wanted and is seldom offered. Stock from Prince Edward Island is usually very well graded and of good quality and sells at a considerable premium over Maine stock. The few receipts of Idaho bakers sell at much higher prices than Maine Green Mountain.

Maine receipts are largely in 100-pound sacks but some are in 15-pound sacks. Formerly many cars of bulk shipments were received but this type of business is declining rapidly. Nearby stock is mostly packed in 60-pound second-hand bags. Receipts from Prince Edward Island are in 90-pound sacks.

Practically all methods of purchase are used. Most cars are bought through Boston brokers. Consignments are rare and are practically limited to periods of very light demand or to offgrade receipts, and the commission is usually 8 to 15 cents per bag. Brokerage usually varies from $10 to $20 per car.

In addition to the movement through the local channels of distribution common to large markets, Boston, because of its location as a gateway for Maine shipments, enjoys a large reconsignment business. Its dealers receive carlot orders from distant points which are filled by stock on track in Boston or are obtained through connections in the Maine producing district. Through rates are available to Boston by rail, and then to destination by boat. They stimulate movement through Boston in the fall and early winter to points as far distant as Florida and Texas. The price of these carlot sales to outside points is usually 5 to 10 cents per 100 pounds less than the local less-than-carlot wholesale price. The l. c. l. wholesale unit of sale for local consumption is commonly 25 to 50 bags, but may be as small as 1 bag at the Charlestown market. Chain stores handle a large part of the potatoes used locally, and they buy in carlots through their brokerage affiliations or other brokers. Local carlot receivers also supply some of the chain-store requirements. During the home-grown season many retailers are supplied directly by growers' or shippers' trucks.

NEW YORK

More than 95 percent of New York's supply of late-crop potatoes comes from Maine and Long Island. There are also considerable receipts from Idaho, Pennsylvania, New York (other than Long Island), and Prince Edward Island. The greater part of the receipts from Long Island come by truck, whereas the Maine receipts arrive by rail or boat. Maine potatoes are bought chiefly through brokers although some are received on consignment. Many large New York dealers operate warehouses in the producing areas, either in their own names or in joint account with shippers. Most potatoes from Long Island are bought either directly from the country dealers or are received on consignment. Some are grown under contract with local receivers.

Many of the potato dealers in New York make a specialty of this crop and have their offices or warehouses at or near the various railroad terminals. The principal potato yards are at the Bronx Produce House near Harlem River, Forty-first Street, Bronx Terminal, pier 17 in New York City, and Flatbush Yards, Brooklyn (fig. 13). Some boat cargoes are discharged at Jersey City, Brooklyn, and Port Newark, N. J. Carlot receivers sell largely on a less-than-carload basis to jobbers, peddlers, or large retailers. In an advancing market there are frequently speculative sales on a carlot basis. Chain stores buy a large part of their stock in carlots at shipping point or on the local market.

Brokerage charges are from $10 to $15 per car. Commission charges on consignments of carlot shipments are usually 10 percent, although in some instances the charge is slightly less. Bulk stock takes the higher rate and sacked stock may be handled at slightly less than 10 percent.

Sacked stock is practically all in 100-pound sacks. There are considerable receipts of bulk shipments and these are often sold from the car on a so-called barrel basis of 180 pounds. Most of the Idaho potatoes are received in 100-pound sacks and are sorted and repacked in boxes, cartons, and 10-pound sacks.

As the leading variety produced in Maine and Long Island is the Green Mountain, this variety is the one commonly used and bought.

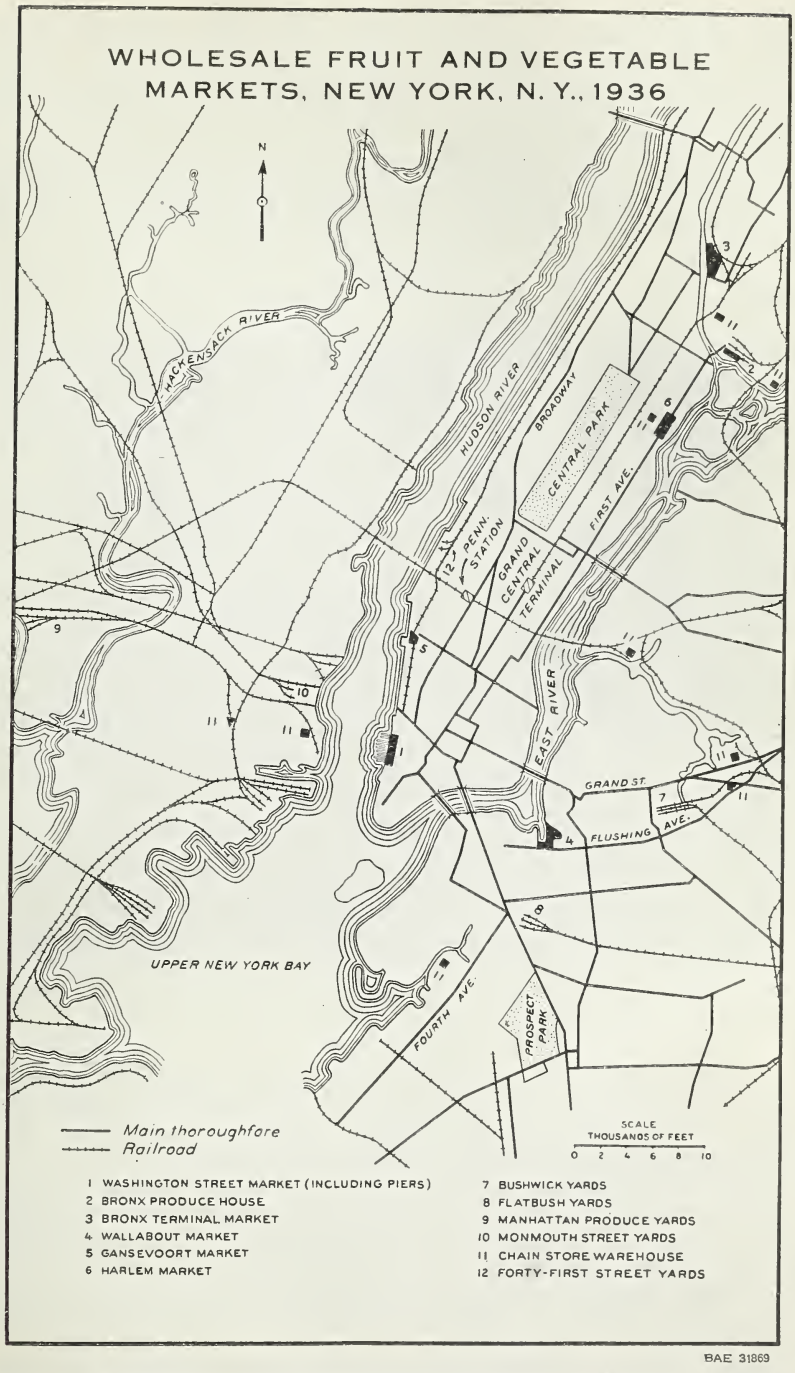

FIGURE 13.—The principal carlot receiving locations for late-crop potatoes in New York, N. Y., are marked 1, 2, 3, 7, 8, and 12, on this map.

Green Mountains from Long Island generally sell at a premium over those from Maine. Limited receipts from Prince Edward Island usually sell about as high as the best Long Island stock. Idaho Russet Burbank stock of U. S. No. 1 grade, including some large potatoes suitable for baking, usually sells considerably higher than the best Green Mountain stock.

Some potatoes are distributed from the city to the surrounding metropolitan area, but many of the larger cities located nearby get their supplies direct by rail or truck from producing areas.

PHILADELPHIA

Most of the late-crop potatoes used in Philadelphia come from Maine and Pennsylvania, with smaller quantities from Idaho, New York, and New Jersey. A noticeable trend in recent years has been increased receipts from Maine and a decrease in receipts from New York. During the fall and early winter the supply is chiefly from Pennsylvania; most of it arrives by truck. Large quantities of Maine potatoes are received by boat.

Rail receipts are handled largely at the Pennsylvania Produce Terminal, while trucked-in stock is received mostly at the Dock Street and Callowhill Street markets. Boat cargoes of Maine potatoes are unloaded on piers 38 and 40, and most of these receipts are sold on the piers, but occasionally a few carloads of these boat receipts are moved by rail to the Pennsylvania Produce Terminal for sale.

The Philadelphia supply is chiefly round white varieties, including Green Mountain and potatoes of the Rural group. Most of the receipts are in 100-pound sacks. A few carloads of bulk stock are received (fig. 14). Some Idaho Russet Burbanks are in 10- and 50-pound sacks, and some 15- and 60-pound sacks are used for Pennsylvania potatoes. A large part of the receipts in small sacks are handled by chain stores.

In general, Pennsylvania and Maine receipts sell at about the same price for similar quality, although there is usually a much greater percentage of low-grade, low-priced Pennsylvania stock on the market. Dealers obtain supplies by outright purchase from shippers, usually on a delivered basis. Some stock is received on consignment and some on joint account. Because of the large quantities of potatoes produced in the area near this city it is not an important distributing point for potatoes.

PITTSBURGH

In recent years Maine has become the chief source of Pittsburgh carlot potato supply. Some rail shipments come from New York, Michigan, Pennsylvania, and Idaho. Truck receipts chiefly from eastern Ohio and western Pennsylvania are also important.

Some eastern sacked stock is in 15-pound sacks and some western stock in 10-pound sacks, but most receipts are in 100-pound sacks. Most receipts are bought on a delivered basis. Consignments that are handled on a commission of 5 to 7 percent are of minor importance. Probably 40 percent of late-crop receipts are purchased by receivers through local brokers. Most of the remainder are purchased direct from shippers.

The method of handling late-crop receipts has changed greatly in the last few years. All carlot receipts offered for sale in small lots are now unloaded on the sale platform at the market between Sixteenth

and Twenty-first Streets along the Allegheny River, instead of being sold directly from cars as formerly. The carrier makes a small charge for unloading and another small charge is made for delivery. A strictly jobbing market for potatoes is a thing of the past. Carlot receivers will sell from 1 to 50 sacks to a buyer, usually at about the same price per sack regardless of the number of sacks. Truck receipts are handled through the various produce stores in the wholesale district, largely on consignment, the usual rate being 10 percent with some business at 7 percent. Most truck receipts are the Russet Rural group. They usually sell at lower prices than rail receipts owing to generally poorer grade and unattractive appearance. Green Moun-

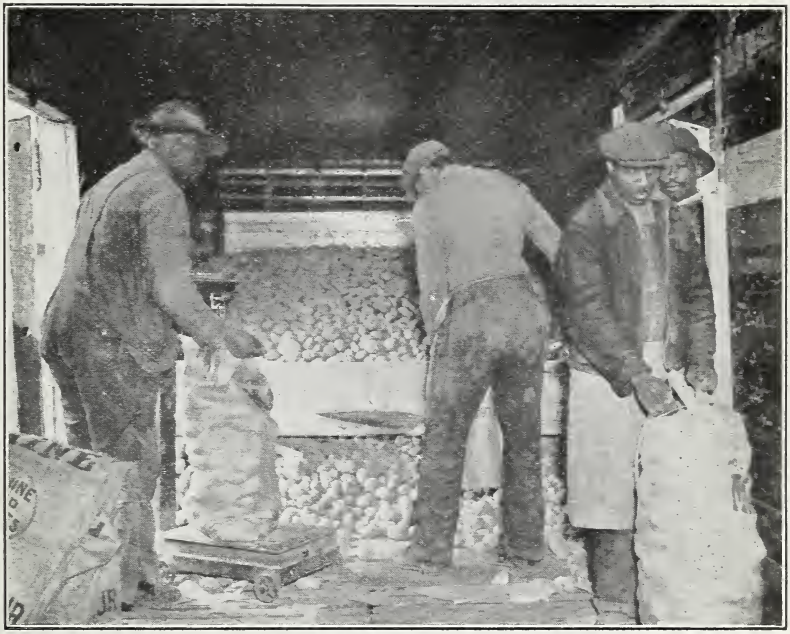

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FIGURE 14.—Some carloads of bulk potatoes, principally from Maine, are received in the eastern markets. Bulk shipments have declined in importance during the last decade.

tain potatoes bring a premium over stock of the Rural group, usually of 15 to 50 cents per sack.

DETROIT

At least 75 percent of the Detroit late-crop potato supply is from Michigan. Probably 60 to 75 percent of the Michigan receipts are brought in by truck. Idaho and Maine are the other important sources of carlot supply. The leading wholesale market is the Detroit Union Produce Terminal. Some stock is handled at the Central Produce Terminal. Jobbing markets and the Municipal Farmers Markets are located in the Eastern and Western Markets.

Carlot receivers buy mostly on a delivered basis through brokers. Truck receipts are usually bought delivered at the dealer's store or warehouse. Under normal conditions, there is little consignment business. The usual commission on consignments is 5 to 7 percent, mostly 5 percent.

Receivers of carlot and truck stock generally sell in lots of 5 to 50 bags to jobbers. There is a growing tendency to sell in smaller lots and to large retailers. Many jobbers buy Michigan potatoes direct from farmers or truckers. Chain stores buy most of their potatoes in carlots f. o. b. or delivered, or from growers or truckers delivered at their warehouses. A large volume of motortruck receipts are sold by growers to jobbers or retailers at the municipal farmers' markets.

The Maine Green Mountain usually brings a premium in the wholesale market of 35 to 60 cents per 100 pounds over the Michigan Russet Rural. The corresponding premium for the Idaho Russet Burbank is 40 to 75 cents. Most receipts are in 100-pound sacks, but there is a fair demand for Idaho stock in 10-pound cotton bags, and a limited demand for Maine stock in 15-pound paper bags.

There is some carlot distribution from Detroit, probably averaging about 500 to 700 cars per year. There is also some distribution by truck within a radius of 50 to 75 miles, largely of stock from other States.

CHICAGO

Chicago is the key market for potatoes produced in the Middle Western and Mountain States. The leading sources of late-crop potato receipts are Idaho, Colorado, Wisconsin, Minnesota, North Dakota, and Michigan.

A large part of the carlot receipts are sold in carlots by the original receivers to jobbers, or other large buyers. There are about 15 active carlot receivers and a large number of jobbers. Chain stores at times act as both buyers and sellers on the market. Cars to be unloaded in Chicago are sold either "outweight" or "invoice weight" basis. Outweight means that each load taken from a car is weighed and payment is made for the net weight of potatoes in the car as thus determined at the agreed price per 100 pounds. Shippers must then assume losses due to shrinkage or shortages in weight. In 1936–37 the objection of shippers and shippers' organizations to the outweight basis of sale resulted in a larger proportion of the Chicago sales being on a basis of invoice weight, i. e., payment is made for the weight shown on the invoice. Local jobbers prefer to buy on the outweight basis.

During most of the late-crop marketing season carlot sales are made in the Wood Street yards of the Chicago & North Western Railroad (fig. 15). The cars are placed on team tracks and are available to both buyers and sellers for inspection. Most of the potato jobbers are located on the South Water, Randolph, and South State Street markets. When a receiver sells a car of potatoes to a local jobber or other buyer, the buyer unloads the car and pays all cartage and handling charges.

In recent years many potatoes have been trucked into Chicago, chiefly from Wisconsin, Michigan, and Minnesota. In the 1936–37 season motortruck receipts were much lighter than in several preceding years. This may be attributed to a combination of factors including the short crop, higher prices, and reduced freight rates on Wisconsin shipments to Chicago.

As supplies come from widely separated producing areas, there are a number of important varieties or types in the market. These include the round white type and the following varieties: Late Petoskey (Russet Rural), Green Mountain, Russet Burbank, Red McClure, and Early Ohio. Nearly all trading is on the basis of United States

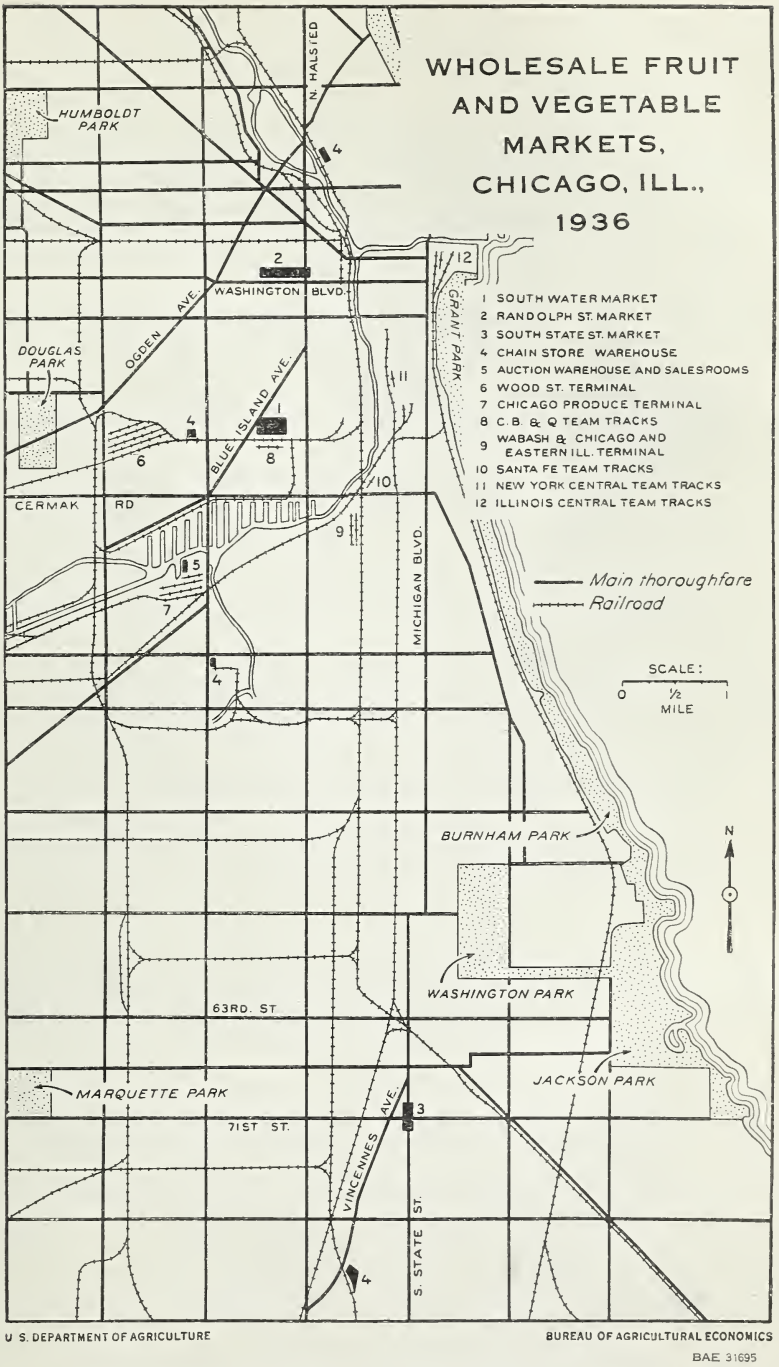

FIGURE 15.—Carlot sales of late-crop potatoes in Chicago are made at the Wood Street yards, marked 6. Most of the jobbers are located at markets 1, 2, and 3.

grade specifications. The 100-pound burlap sack is the principal container. Idaho shippers also use a few 15- and 25-pound cotton sacks. A few 100-pound cotton sacks are used for the best quality of Colorado Red McClure.

The Russet Burbank, chiefly from Idaho, and the Red McClure from Colorado, sell at the highest prices. The Green Mountain from the Upper Peninsula of Michigan and northern Wisconsin, and the Early Ohio from Minnesota and North Dakota sell at somewhat lower prices. The Late Petoskey from Michigan and the round white from Wisconsin and Minnesota usually sell at slightly lower prices than the Green Mountain or Early Ohio.

As a rule, most potatoes from Idaho and Colorado are bought f. o. b. cash track. A common method of purchase in Minnesota and North Dakota is f. o. b. with the buyer having the privilege of inspecting the shipment in Chicago to ascertain whether it meets the grade as specified, before accepting it. Wisconsin and Michigan potatoes are purchased both f. o. b. and delivered. Potatoes from all these States, particularly Wisconsin, are at times consigned to Chicago. Some dealers buy from growers and store in warehouses in producing districts for shipment during the season. Most of the carlot handlers have representatives during the season in all the important areas supplying the market. The commission or brokerage paid by the shipper on a carlot sale of potatoes in Chicago is from $10 to $20 per car, usually $15.

Chicago is the principal distributing point for late potatoes from central and western producing districts. Chicago operators sell cars to dealers in the Middle West, South, and Southwest, and some western stock to eastern cities. Cars sold to out-of-town places may be diverted from Chicago or diverted in transit. About one-half of the carlot potato arrivals are diverted to other markets. Large quantities of seed stock from Minnesota, North Dakota, Nebraska, and Wisconsin for use in Alabama, Mississippi, Louisiana, Texas, Tennessee, Kentucky, and in the West Central States, pass through the Chicago market.

ST. LOUIS

Idaho, Colorado, Minnesota, Nebraska, North Dakota, and Wisconsin are leading sources of late-crop potatoes used in St. Louis. During the late summer and early fall, receipts are heavy from nearby Illinois and Missouri. The wholesale market district does not have direct railroad switching facilities, but several firms that handle potatoes are located on private switches. Carlot sales are usually on an invoice-weight basis. Most of the carlot receipts are bought on an f. o. b. basis, either direct from shippers or through local brokers. Under normal conditions very few cars are handled on consignment. Sales by jobbers to retailers are apparently not declining in volume. These sales are generally in lots of one to five sacks. The 100-pound burlap bag is the principal container, although some Idaho and Maine potatoes are received in 15-pound cotton sacks. Some receipts of Colorado Red McClure are washed stock packed in 100-pound white cotton sacks. These frequently bring a premium of from 10 to 15 cents over unwashed Red McClure in burlap sacks. A few dealers resack Colorado and Idaho Russet Burbank potatoes in their own branded 15-pound cotton sacks. St. Louis is known as an important market for red potatoes. The Bliss Triumph and Red McClure

varieties are popular. The Russet Burbank is the preferred late-crop white variety, although the demand for potatoes of the Rural group from Michigan and Wisconsin has increased recently. Much of the trading is on the basis of U. S. No. 1 grade. There are some sales of U. S. Commercial and U. S. No. 2.

Chain stores are important factors in potato distribution. They buy carlots through their own field representatives or through local brokers and occasionally from local jobbers. Wholesalers in towns within a radius of 200 miles draw considerable supplies of potatoes from this city.

KANSAS CITY

Kansas City is an important diversion point for potatoes because of its location and railroad facilities, and the fact that it is headquarters for several important dealers and brokers who handle potatoes almost exclusively. The Idaho Russet Burbank, especially the U. S. No. 2 grade, leads in the late-crop supply. The Early Ohio from the Red River Valley district of North Dakota and Minnesota, and the Bliss Triumph from Nebraska and Colorado, and the Red McClure from Colorado are also popular. The Red McClure has shown a decided gain in popularity at the expense of the People's Russet in recent years. The highest priced variety is the Idaho U. S. No. 1 Russet Burbank. The Red McClure frequently sells at 5 percent, or slightly more, below the price of U. S. No. 1 Russet Burbank. Normally the Nebraska Bliss Triumph and Red River Valley Early Ohio sell at prices about 10 percent lower than U. S. No. 1 Russet Burbank. The U. S. No. 2 Russet Burbank normally sells from 10 to 20 percent less than U. S. No. 1 grade of this variety. A few dealers resack some Idaho Russet Burbank and Colorado Red McClure into 10- and 15-pound packages for sale to local retailers. These small sacks, however, do not amount to more than 5 percent of the sales on the wholesale market.

Carload sales are on an invoice-weight basis on track. Brokers and dealers take the customers to the cars and permit them to inspect the potatoes. Occasionally local wholesalers buy cars direct from shippers, but most carlot purchases are made through brokers or dealers who have local establishments. Chain stores buy mostly in carload lots through their own purchasing agencies. Sales are made to dealers in the trade territory around Kansas City in carload lots. These sales are chiefly on the basis of United States grades.

ATLANTA

Maine is the chief source of late-crop potatoes in Atlanta. Other States contributing to the supply include Colorado, Wisconsin, Michigan, and New York. Truck receipts of late-crop potatoes probably do not exceed 20 percent of the late-crop supply and are mostly from Michigan. Potato wholesalers and brokers are practically all located in one row of buildings with convenient team tracks for unloading. Nine wholesale dealers, four chain stores, and three brokerage firms, handle most of the carload receipts. Most of the receipts are bought on a delivered basis. The chain stores generally buy in carlots, but buy some potatoes in less than carlots from local dealers. There are no bulk receipts. Practically all transactions are on the basis of United States grades. The leading varieties are Green Mountain and

other round white potatoes, but Colorado Brown Beauty and Idaho Russet Burbank are used, particularly when supplies from the East and Middle West are limited. Carlot diversions from Atlanta are of relatively minor importance.

NEW ORLEANS

Late-crop potatoes received at New Orleans are principally from Colorado, Maine, and Idaho. The transportation rates from Colorado by rail, and from Maine by rail and boat, are about equal.

The principal wholesale market is located on Poydras Street. Most of the sales in large lots are made from the railroad sheds or warehouses of the Southern Pacific and Louisville & Nashville Railroads. Jobbers have headquarters on the Poydras Street Market and the French Market. There are about 16 wholesale receivers who also do a major part of the jobbing business.

Varieties of importance in the late-crop supplies are Brown Beauty, Green Mountain, Russet Burbank, and to a lesser extent, potatoes of the Rural, Triumph, and Cobbler groups. The Russet Burbank always commands a premium in price. Most of the trade now prefers the Green Mountain to the Brown Beauty.

Practically all purchases in carlots by New Orleans dealers are on a delivered basis and are bought through local brokers who charge sellers $12 to $15 per car. There is very little consignment business in potatoes on the New Orleans market. The commission charge on this type of business is 8 or 10 percent. Carlot receivers sell to jobbers, chain-store operators, and independent retailers. Redistribution of potatoes from New Orleans is of small importance because dealers in the smaller markets in Louisiana and along the Gulf coast can handle carloads of potatoes. This is in contrast to many other commodities that are purchased here and trucked to the smaller markets. Some potatoes are received by boat and are trucked to the smaller markets.

FORT WORTH

Fort Worth receives its late-crop potato supply principally from Colorado, Idaho, and California. Receipts from California and Idaho are by rail, while those from Colorado are both by rail and truck. These Colorado truck receipts come largely from the San Luis Valley. In some recent years Bliss Triumph and Green Mountain potatoes from Maine have reached here, coming by boat from Gulf ports.

The most popular late-crop varieties are the Burbank from California and Russet Burbank from Idaho. The Bliss Triumph and round white potatoes appear to have lost popularity to the Burbank, Russet Burbank, and Red McClure. Good quality washed potatoes of the Burbank and Russet Burbank varieties are used for the higher priced trade, and U. S. No. 2 Russet Burbank for the cheaper trade.

Purchases by dealers in Fort Worth are mainly through brokers on a delivered basis. Consignments are usually confined to a few "distress" cars. Chain-store purchases are usually made by their own buying agencies at shipping point.

The 100-pound sack is the most popular container and the demand for the open-mug pack of the better long-type potatoes is increasing. Smaller containers have been tried but have not proved to be popular.

DENVER

The leading source of late-crop potatoes in Denver is found in the northern Colorado districts, with the western slope and San Luis Valley also furnishing part of the supply. Receipts from Idaho are second to those from Colorado and probably average from 10 to 15 percent of the total. The leading wholesale potato dealers are located on Market Street; they probably handle three-fourths of the total volume. Truckloads brought in by growers are sold mainly on the city market which is about one-half mile from the Market Street district. Some dealers haul their own potatoes from northern Colorado by truck, and it is estimated that approximately one-third of the potatoes consumed in Denver arrive by motortruck, principally from northern Colorado.

The chief varieties on the market in order of volume used are the Rural, Russet Burbank, Red McClure, and Bliss Triumph. All receipts are in burlap sacks of approximately 100 pounds. The Red McClure and Russet Burbank usually sell at the highest price range, and about 25 to 50 cents per 100 pounds above the Bliss Triumph, which in turn frequently sells at 10 to 20 cents per 100 pounds above the northern Colorado Rural or round white. The "red soil" Russet Burbank, produced on the western slopes of Colorado, is very popular and commands a premium of from 25 to 50 cents per 100 pounds above the ordinary Russet Burbank.

Denver is an active diversion point for potatoes from Colorado and other Mountain States and the supply on track is usually large. Most of the purchases of late potatoes by Denver dealers are therefore made on track on a delivered basis. The customary brokerage on late-crop potatoes is $15 per car. Wholesalers who buy on a carlot basis sell their potatoes to retailers, truckers, and small jobbers. Sales to jobbers are of minor importance as the small dealers can buy potatoes from northern Colorado in truck loads direct from the growers. Distribution to the immediate surrounding territory is not important because of the large local production.

SEATTLE

The supply of late potatoes in Seattle comes principally from the Yakima Valley and other eastern Washington districts. There is some locally grown stock, and occasional shipments come from Idaho or Oregon. The wholesale and jobbing markets are centrally located. Five or six brokers or distributors receive most of the potatoes, selling them in less-than-carload lots to the jobbers. Nearly all receipts are bought f. o. b. Brokerage charges are generally $1 per ton. Possibly 25 percent of the receipts are brought in by truck. There is some distribution through Seattle by boat to Alaska, California, and Pacific islands. Receipts are in branded sacks with the stock of U. S. No. 1 grade or Washington combination grade generally packed in 100-pound sacks and U. S. No. 2 grade in 50-pound sacks. Potatoes from eastern Washington are usually washed; they bring 10 to 15 cents per 100 pounds premium over unwashed stock. Locally grown potatoes are generally sold unwashed, are of darker color than stock from eastern Washington, and often sell at 50 to 75 cents per 100 pounds below the price of potatoes from eastern Washington.

SAN FRANCISCO

Late-crop potato receipts at San Francisco are mainly from California, Oregon, Washington, and Idaho. Most receipts from Oregon are by rail and practically all receipts from Washington come by boat. A few shipments come from Hawaii. Less than 10 percent of the city's supply comes by truck. There are 8 or 10 carload receivers on the market, mostly brokers or representatives of large companies who operate in producing districts. Two or three of the larger concerns own or control considerable acreage. Most stock is purchased f. o. b. producing districts. San Francisco is an important distributing center for naval and ship's stores.

LOS ANGELES

Slightly more than one-half of the late-crop potatoes unloaded in Los Angeles come from producing districts of California. The delta district is the leading source of supply. Normally from 20 to 30 percent of the late-crop receipts are from Idaho and roughly 10 percent from the Klamath district in southern Oregon. It has been estimated that over two-thirds of the rail and boat shipments loaded in the delta district in California find a market in Los Angeles, as compared with about one-fourth of the output marketed in San Francisco. Nearly all of the late-crop receipts come by rail. Before 1935 considerable quantities were received by boat from the delta district. Perhaps less than 5 percent of the Los Angeles receipts of late potatoes come by truck.

About 15 producers and brokerage firms handle most of the late-crop arrivals. Few, if any, of these firms restrict themselves to brokerage transactions. The business of most of them consists largely of joint-account and purchase transactions. A large part of the shipments from the delta district are consigned, and some are handled on a joint-account arrangement between firms in Los Angeles and the shippers. Brokers or dealers of Los Angeles buy most of the receipts from Idaho on an f. o. b. basis, paying a shipping-point brokerage of $9 or $10 per car. Oregon receipts are nearly all handled on a joint-account basis through local brokers. The usual brokerage charged by firms in Los Angeles for selling cars from outside the State is $20. Cars from the delta district are usually handled at 5 cents a sack or sometimes from $15 to $18, and occasionally $10 per car is charged. Commission houses charge from 10 to 12 percent on the few cars of late-crop potatoes received on consignment.

Large chain stores handle a little less than 10 percent of all late-crop potatoes unloaded. They buy their Idaho and Oregon stock through their local brokerage affiliations, which in turn receive their supplies from their buying representatives in the producing areas. The chains buy their supplies of delta potatoes direct from Los Angeles producers. Sales of late-crop potatoes are made at the team tracks which are located within three-fourths of a mile of two of the wholesale markets and about one-fourth of a mile from the City Market. Cars are bought by jobbers, chain-store buyers, representatives of out-of-town firms, and buyers for county institutions. The sales are usually on a straight carload basis. After the sale the car is diverted from the team tracks to the store of the buyer, or the shipment is hauled there by the buyer's truck. Carlot sales are usually on a package basis; lots are weighed, and if the average is

found to be less than 98 pounds per sack, the sale is consummated on a weight basis. Jobbers sell in lots of a few sacks to retailers, peddlers, restaurants, hotels, manufacturers of potato chips, and occasionally in large lots to other jobbers. Most retailers and peddlers haul their own purchases, whereas the jobbers deliver to others.

The majority of the delta potatoes are White Rose, known as "Wisconsin Pride." Some potatoes of the Burbank variety are also received from the Delta district. The Wisconsin Pride usually sells from 5 to 10 cents per 100 pounds below the Burbank. All other late-crop potatoes received are Russet Burbank. The Oregon Russet Burbank usually sells at a discount of 5 to 10 cents per 100 pounds below corresponding quality of Wisconsin Pride and at a slight premium over the Russet Burbank from other producing areas.

Most receipts, except from the delta district, are graded on the basis of the United States standards. Receipts from the delta district usually have the mouths of the sacks closed with an oval piece of cardboard bearing the shipper's label. This is inserted under the lacings in the mouth of the sack. Nearly all receipts are in 100-pound sacks. A few cars of Idaho Russet Burbank potatoes are received in 25-pound cotton or open-mesh bags, but this package, once popular in Los Angeles, has largely fallen into disuse. Several years ago, largely because of the efforts of a large chain store, the small sacks became rather popular. The Russet Burbank was chiefly packed in them. Taking advantage of the demand built up for these small sacks, a number of dealers packed ungraded and U. S. No. 2 stock in attractively branded small sacks. This practice soon made the small containers very unpopular.

Roughly, 10 percent of all cars of late potatoes received are diverted to out-of-town points in southern California, where a local rate from shipping districts is available. There is comparatively little redistribution of potatoes by motortruck.

FOREIGN TRADE IN POTATOES

Foreign trade of the United States in potatoes is relatively small in comparison with domestic production. In the period 1932–36 exports and imports each averaged slightly more than 1,000,000 bushels annually, which is less than 1 percent of the yearly marketings of potatoes grown in the United States.

Cuba, the best foreign customer for potatoes grown in this country received more than half the exports in the 5-year period (table 16). Canada and Panama are next in importance. Exports to Canada are largely early- and intermediate-crop potatoes and the heaviest movement is in May and June. A large part of the exports to countries other than Canada are late-crop potatoes. In the 2 months, September and October, exports amounted to about 42 percent of the annual total (table 17).

Imports of potatoes into the United States are mostly from Canada. Cuba, Bermuda, and a few other countries ship in small quantities. Certified seed imported from Canada in 1936 exceeded the quantity of table stock imported from that country, although for the 4-year period 1932–36 the quantity of table stock was considerably greater (table 18). Most of the certified seed is brought in from November to April.

TABLE 16.—*Exports of potatoes from the United States by countries of destination, 1932–36*

Country of destination	1932	1933	1934	1935	1936	Average, 1932–36
	Bushels	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*Bushels*
Canada	197,657	167,060	198,679	167,798	193,575	184,954
Mexico	22,342	23,577	37,402	42,930	34,555	32,161
Cuba	377,331	207,761	567,719	1,226,745	685,540	613,019
Panama	127,816	143,202	152,422	165,633	178,151	153,445
Dominican Republic	27,392	12,948	16,828	2,604	2,522	12,459
Honduras	10,625	10,985	7,689	5,558	3,046	7,581
Netherlands West Indies	15,356	13,811	12,577	16,001	12,509	14,051
Haiti	8,038	7,409	6,644	6,924	4,138	6,631
French West Indies	26,903	23,021	20,804	6,048	10,428	17,441
Venezuela	31,719	28,903	41,702	51,001	31,497	36,964
Philippine Islands	12,720	41,228	51,144	68,748	52,205	45,209
Other countries	54,021	38,702	57,088	47,925	85,927	56,733
Total	911,920	718,607	1,170,698	1,807,915	1,294,093	1,180,647

TABLE 17.—*Exports of potatoes from the United States by months, 1932–36*

Month	1932	1933	1934	1935	1936	Average, 1932–36
	Bushels	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*Bushels*
January	19,782	43,272	36,283	38,289	40,438	35,613
February	16,568	23,659	23,991	82,411	38,814	37,089
March	26,181	34,437	32,470	38,786	44,046	35,184
April	20,508	38,931	37,870	35,613	54,106	37,406
May	41,780	52,723	55,724	56,947	75,989	56,633
June	148,756	141,304	150,764	132,139	112,692	137,131
July	58,277	40,652	51,263	205,824	45,978	80,399
August	37,502	45,907	99,424	306,816	135,168	124,963
September	114,301	143,843	218,528	257,366	227,527	192,313
October	163,861	56,585	369,267	494,010	453,499	307,444
November	176,649	61,629	58,441	123,276	24,385	88,876
December	87,755	35,665	36,673	36,438	41,451	47,596
Total	911,920	718,607	1,170,698	1,807,915	1,294,093	1,180,647

TABLE 18.—*Imports of potatoes into the United States by countries of origin, 1932–36*

Country of origin and class of imports	1932	1933	1934	1935	1936	Average, 1932–36
Canada:	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*Bushels*
Certified seed		494,469	254,608	111,091	729,370	[1] 397,384
Other		609,126	1,213,483	237,491	469,809	[1] 632,477
Total	[2] 657,181	1,103,595	1,468,091	348,582	1,199,179	955,326
Bermuda	35,381	28,888	25,039	21,340	[3] 14,264	24,982
Cuba	33,853	[3] 36,723	[3] 2,623	38,665	46,726	31,718
Mexico	0	1,105	0	0	1,612	543
Newfoundland and Labrador	0	0	4,320	0	1,350	1,134
Other countries	500	9,744	38,143	1,047	2,793	10,445
Total	726,915	1,180,055	1,538,216	409,634	1,265,924	1,024,149

[1] 4-year average. [2] Seed and table stock not segregated. [3] Includes small quantities of certified seed.

Under the terms of the trade agreement with Canada, effective January 1, 1936, the import duty on certified seed potatoes from Canada and other countries from whom the United States receives most-favored-nation treatment was reduced from 75 cents per 100 pounds to 60 cents per 100 pounds from December to the end of February and to 45 cents per 100 pounds from March to November, inclusive, on a quota of 750,000 bushels in any year beginning December 1. Imports of certified seed potatoes in excess of the above quota are dutiable at 75 cents per 100 pounds, which is the rate applicable to imports of table stock at any time during the year from all countries except Cuba. Under the terms of the trade agreement with Cuba,

effective September 3, 1934, the duty on imports from that country into the United States was reduced from 60 to 30 cents per 100 pounds from December to the end of February, remaining at 60 cents per 100 pounds during the rest of the year. An exception is that from March to November, when certified seed potatoes coming into the United States under quota are dutiable at 45 cents, any imports of certified seed from Cuba receive a preference of 20 percent making the rate 36 cents per 100 pounds. Imports of seed potatoes from Cuba into the United States are of slight importance.

Imports of potatoes into Canada from the United States became duty-free under the trade agreement with Canada, but a countervail-

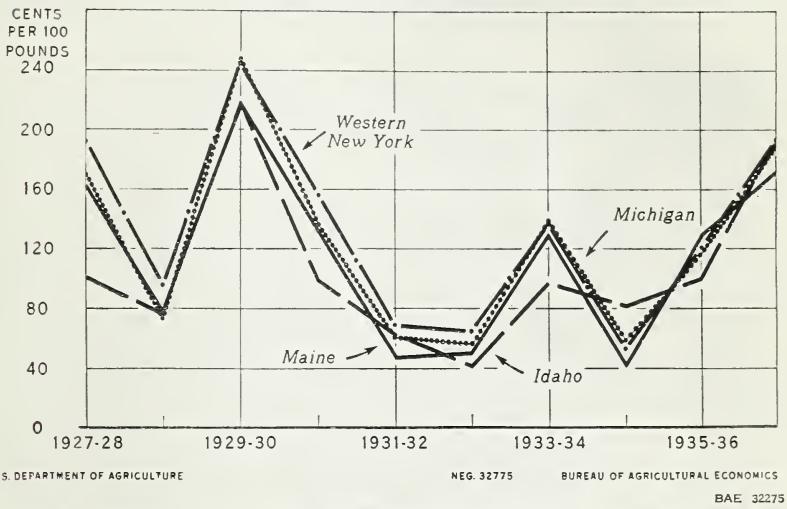

FIGURE 16.—SEASONAL WEIGHTED AVERAGE PRICES OF POTATOES SACKED, U S. NO. 1 GRADE, IN CARLOTS AT SHIPPING POINTS, 1927-28 TO 1936-37

Variations in seasonal average shipping-point prices in different States are due to differences in transportation charges, varieties, production, and other factors. Price trends from year to year in the different States are generally similar.

ing clause was incorporated under this item in the Canadian customs tariff which provided that an equivalent duty be imposed to that set by any foreign country on Canadian potatoes. Therefore, on May 2, 1936, the Canadian duty on imports from the United States, on both seed and table stock, became the same as the United States duty on imports from Canada.

Under the trade agreement with Cuba, effective September 3, 1934, imports of all potatoes from the United States were made dutiable at $1.81 per 100 pounds from November to June and $0.91 per 100 pounds during the remainder of the year. In July 1932, Panama placed a duty of $4.54 per 100 pounds on potatoes imported into that country. Certified seed stock, however, is on the free list.

PRICES IN PRODUCING DISTRICTS

As a large part of the commercial crop is sold as U. S. No. 1 grade, the prices quoted in the market news are generally on this basis. Prices at shipping points are mostly per 100 pounds, sacked, in carlots. In general the average seasonal shipping-point prices in various commercial areas follow similar trends (fig. 16).

The prices in producing areas, like Michigan and New York, that are near important consuming areas, have often been slightly higher than in areas like Maine and Idaho that are far distant from thickly populated areas (table 19 and fig. 16). This is true even though the varieties from Maine and Idaho sell at much higher prices in the markets. The explanation is found largely in the relative transportation costs.

TABLE 19.—*Average prices of U. S. No. 1 grade potatoes per 100 pounds, sacked, carlots, specified shipping points, varieties, and months, 1932–33 to 1936–37* [1]

Shipping point, variety, and season	September	October	November	December	January	February	March	April	May	June	Weighted average
Presque Isle, Maine:											
Green Mountain: [2]											
1932–33	$0.37	$0.44	$0.50	$0.57	$0.51	$0.47	$0.50	$0.53	$0.41	$0.67	$0.50
1933–34	1.33	1.17	1.08	1.20	1.43	1.66	1.57	1.35	.92	.68	1.30
1934–35	.54	.43	.44	.41	.39	.37	.33	.59	.34	.23	.41
1935–36	.50	.75	1.29	1.10	1.10	1.10	1.33	1.79	2.10	3.21	1.29
1936–37	1.36	1.41	1.53	1.96	2.15	1.97	1.84	1.51	1.48	------	1.71
Rochester, N. Y.:											
Round White: [3]											
1932–33	------	.62	.61	.67	.67	.66	.67	.72	.68	------	.65
1933–34	------	1.25	1.13	1.20	1.50	1.74	1.70	1.52	1.22	------	1.37
1934–35	------	.59	.55	.57	.54	.51	.43	.57	.44	------	.53
1935–36	------	.95	1.26	1.21	1.21	1.22	1.22	1.72	1.98	------	1.21
1936–37	[4]1.55	1.61	1.72	1.94	2.22	2.24	2.04	1.83	1.75	------	1.93
Cadillac, Mich.:											
Russet Rural:											
1932–33	------	.48	.51	.54	.54	.54	.61	.66	------	------	.57
1933–34	[4]1.56	1.06	1.14	1.27	1.65	1.78	1.56	1.40	[4]1.24	------	1.39
1934–35	[4].95	.64	.58	.60	.59	.52	.50	.63	.49	------	.59
1935–36	[4].77	.74	1.03	1.03	1.04	1.19	1.16	1.48	[4]1.67	------	1.16
1936–37	[4]1.80	1.60	1.59	1.80	2.12	2.23	2.00	1.88	[4]1.78	------	1.88
Waupaca, Wis.:											
Round White:											
1932–33	.49	.43	.46	.51	.50	.51	.52	------	------	------	.49
1933–34	1.23	.97	1.02	1.06	1.45	1.57	1.38	------	------	------	1.25
1934–35	.88	.62	.58	.57	.55	.49	.48	------	------	------	.59
1935–36	.67	.59	.91	.95	.92	1.08	1.03	------	------	------	.86
1936–37	1.73	1.54	1.57	1.68	2.04	2.17	1.97	------	------	------	1.81
San Luis Valley, Colo.:											
Red McClure:											
1932–33	.32	.33	.45	.43	.44	.44	.52	------	------	------	.41
1933–34	.95	.78	.82	.83	1.34	1.51	1.13	------	------	------	1.05
1934–35	.90	.98	1.04	1.09	1.22	1.19	------	------	------	------	1.05
1935–36	.43	.52	.90	.75	.69	.86	1.18	------	------	------	.76
1936–37	------	1.59	1.74	1.84	2.49	2.47	2.14	------	------	------	1.92
Brown Beauty:											
1932–33	.26	.28	.36	.36	.35	.36	.46	------	------	------	.34
1933–34	.87	.76	.83	.83	1.26	1.31	1.07	------	------	------	.99
1934–35	.79	.81	.80	.80	.80	.80	------	------	------	------	.80
1935–36	.43	.53	.90	.80	.75	.86	1.01	------	------	------	.75
1936–37	------	1.50	1.60	1.61	2.23	2.20	1.95	------	------	------	1.75
Idaho Falls, Idaho:											
Russet Burbank:											
1932–33	.40	.38	.39	.39	.35	.34	.40	.59	------	------	.41
1933–34	.86	.79	.85	.79	1.13	1.28	1.04	.90	------	------	.97
1934–35	.79	.71	.78	.71	.72	.68	.76	1.34	------	------	.81
1935–36	.62	.66	1.13	1.03	1.02	1.03	1.07	1.26	------	------	1.00
1936–37	1.25	1.54	1.77	1.88	2.48	2.74	2.38	1.84	------	------	1.92

[1] The monthly prices are straight averages of daily market-news prices. The season average prices are weighted by monthly carlot shipments. For San Luis Valley, Colo., the monthly shipments of each variety were estimated. Prices are based on delivered sales minus all transportation charges except for Idaho and Colorado which are cash prices on track. In computing seasonal averages, where prices are not shown or certain months at the beginning or end of a season, they were assumed to be the same as in the nearest month for which figures were available.

[2] A few Irish Cobbler prices are averaged in with the Green Mountain prices.

[3] Includes some prices on U. S. Commercial grade.

[4] Estimated.

The size of the crop in different areas has some influence on relative prices. For example, the average f. o. b. cash price of potatoes at shipping points in Idaho has usually been slightly lower than the price at shipping points in most other commercial areas based on delivered sales minus transportation costs, but in 1934–35 the Idaho price of 81 cents per 100 pounds was considerably higher than the prices in leading areas in the East and Middle West. This was due, in part, at least, to the fact that the proportion of the crop produced in Idaho and the West as a whole was smaller than in most years, and that there is a certain demand for Idaho Russet Burbank potatoes which is not readily satisfied by other varieties.

There are considerable variations from month to month during the season. In 1935–36, prices in some important districts practically doubled from October to April.

Information on comparative prices on different grades at shipping point is scarce. Most quotations are on U. S. No. 1 grade. Some comparative prices are available on U. S. No. 1 and U. S. No. 2 Idaho Russet Burbank sacked stock, f. o. b. shipping points. For that part of the 1934–35 season for which there are comparable prices, U. S. No. 2 grade averaged 44 cents per 100 pounds which was 44 percent less than the price of U. S. No. 1 grade. In 1935–36, U. S. No. 2 stock averaged 59 cents, or 41 percent, less than U. S. No. 1 in the same period, and in 1936–37, $1.55, or 26 percent, less.

An examination of records of prices of U. S. No. 1 bulk potatoes, cash to growers, as compared with the f. o. b. prices of U. S. No. 1 sacked stock at leading shipping points in the five seasons 1931–32 to 1935–36 shows that the price to growers generally ranged from 15 to 30 cents per 100 pounds below the sacked f. o. b. price. In a few instances smaller and larger margins were indicated. In years of high prices the margin tended to be greater than in years of low prices. Out of these margins local buyers must take care of costs of grading, and sacks, the selling costs, and risks.

Many late-crop potatoes are grown on small acreages in noncommercial areas. These are often marketed locally and prices are generally somewhat higher and subject to less variation through the season and from year to year than prices in most commercial producing areas.

PRICES FOR CERTIFIED SEED POTATOES

Price ranges for certified seed of leading varieties at Maine shipping points for three seasons 1934–35 to 1936–37 are shown by months in table 20. Seed is shipped in sacks of various sizes, but prices in this table have been converted to a basis of 100 pounds. Prices of certified seed have been somewhat higher than prices of table stock. As a rule, there have been small differences in prices for certified seed among the Spaulding No. 4, Irish Cobbler, and Green Mountain varieties. Seed potatoes of Katahdin, particularly in 1936–37, brought a moderate premium over the other varieties in most months.

TABLE 20.—*Approximate range in prices for certified seed potatoes per 100 pounds, sacked basis, f. o. b. Presque Isle, Maine, specified months, 1934–35 to 1936–37* [1]

Variety and season	December	January	February	March
Spaulding No. 4:				
1934–35	$0.51	$0.64	$0.52	$0.49–$0.60
1935–36	1.06–1.42	1.06–1.27	1.15–1.27	1.27–1.42
1936–37	1.91–2.03	2.36–2.67	2.30–2.54	1.98–2.37
Irish Cobbler:				
1934–35	[2] .78–.91	.63–.89	.60–.74	.76–1.15
1935–36	1.24–1.67	1.15–1.42	1.12–1.27	1.12–1.45
1936–37	2.03–2.67	2.30–2.67	2.12–2.60	1.82–2.51
Green Mountain:				
1934–35	.55	.50–.52	.48–.57	.43–.58
1935–36	1.15–1.64	1.06–1.36	1.15–1.33	1.18–1.67
1936–37	1.90–2.51½	2.57–2.67	2.25–2.54	1.80–2.47
Katahdin:				
1935–36	1.45–1.73	1.15–1.52	1.21–1.33	1.27–1.67
1936–37	2.30–2.42	2.75–2.85	2.40–2.77	2.25–2.67

[1] Prices were compiled from weekly data and are therefore approximate only for the months shown.
[2] January and February delivery.

PRICES IN CITY MARKETS

Prices of leading varieties from important late-crop-producing States for the five seasons 1932–33 to 1936–37 are shown by months for the two largest markets, New York and Chicago, in tables 21 and 22.

TABLE 21.—*Average wholesale prices of U. S. No. 1 grade potatoes, l. c. l., specified origin, varieties, containers, and months, New York, N. Y., 1932–33 to 1936–37*

Origin, variety, container, and season	October	November	December	January	February	March	April	May	Unweighted average
Maine, Green Mountain:									
100-pound sack:									
1932–33		$1.03	$1.12	$1.08	$1.05	$1.04	$1.07	$1.01	$1.06
1933–34	$1.77	1.62	1.70	2.07	2.28	2.25	1.97	1.55	1.90
1934–35	.88	.93	.92	.93	.93	.85	1.10	.89	.93
1935–36	1.28	1.76	1.67	1.67	1.68	1.86	2.37	2.58	1.86
1936–37	1.89	1.98	2.48	2.71	2.56	2.47	2.16	2.08	2.29
Long Island, N. Y., Green Mountain:									
100-pound sack:									
1932–33	.98	1.10	1.26	1.25	1.27	1.30	1.32		1.21
1933–34	2.04	1.94	2.01	2.23	2.47	2.50	2.10	1.92	2.15
1934–35	.98	1.02	1.02	1.02	1.02	.92	1.11		1.01
1935–36	1.26	1.94	1.85	1.79	1.78	1.86	2.28		1.82
1936–37	2.11	2.16	2.54	2.87	2.79	2.58	2.40	2.11	2.44
Idaho, Russet Burbank:									
100-pound sack:									
1932–33	1.97	1.72	1.66	1.69	1.67	1.66	1.83	1.95	1.77
1933–34	1.98	1.91	2.01	2.26	2.63	2.34	2.13	1.94	2.15
1934–35	2.01	1.88	1.97	1.99	1.97	1.93	2.52		2.04
1935–36	1.88	2.23	2.20	2.25	2.27	2.30	2.64	2.82	2.32
1936–37	2.89	2.90	3.23	3.54					3.14
Maine, Green Mountain:									
Bulk, per 180 pounds:									
1935–36	2.12	3.00	2.91	2.92	2.98	3.24	4.22	4.62	3.25
1936–37	3.27	3.46	4.45	4.71	4.56	4.46	3.91		4.12
Idaho, Russet Burbank:									
10-pound sack:									
1935–36	.25	.22	.22	.24	.25	.24	.27		.24
1936–37	.28	.30	.32	.38	.43	.41	.33		.35
50-pound box: [1]									
1935–36	2.06	2.11	2.12	2.12	2.13	2.12	2.32	2.46	2.18
1936–37	2.75	2.90	2.98	3.21	3.32	3.36	3.12		3.09

[1] Mostly baking potatoes.

TABLE 22.—*Average price of U. S. No. 1 grade potatoes per 100-pound sacks, carlot sales, specified origin, varieties, and months, Chicago, 1932–33 to 1936–37*

Origin, variety, and season	October	November	December	January	February	March	April	May	Unweighted average
Idaho, Russet Burbank:									
1932–33	$1.14	$1.19	$1.17	$1.19	$1.23	$1.22	$1.37	$1.43	$1.24
1933–34	1.61	1.63	1.61	1.96	2.10	1.91	1.66	1.44	1.74
1934–35	1.51	1.57	1.55	1.59	1.49	1.55	2.12	1.65	1.63
1935–36	1.53	1.90	1.81	1.88	1.91	1.84	2.19	2.54	1.95
1936–37	2.32	2.53	2.65	3.26	3.51	3.22	2.67	2.65	2.85
Colorado, Red McClure:									
1932–33		1.19	1.21	1.22	1.27	1.36			1.25
1933–34	1.50	1.61	1.61	2.10	2.34	1.94	1.62	1.54	1.78
1934–35	1.73	1.86	1.93						1.84
1935–36	1.22	1.62	1.52	1.49	1.65	1.89	2.32		1.67
1936–37	2.30	2.46	2.57	3.23	3.26	2.97	2.86		2.81
Wisconsin, round white:									
1932–33	.65	.69	.74	.72	.74	.76	.75	.72	.72
1933–34	1.20	1.25	1.29	1.70	1.84	1.59	1.43	1.18	1.44
1934–35	.88	.82	.83	.85	.77	.70	.84	.70	.80
1935–36	.83	1.15	1.17	1.19	1.29	1.21	1.49	1.76	1.26
1936–37	1.78	1.78	1.93	2.30	2.46	2.31	2.09		2.09
Michigan, Russet Rural:									
1932–33		.69	.75	.71	.71				.72
1935–36			1.19			1.25			1.22
1936–37		1.80	1.94	2.31	2.48	2.32			2.17
North Dakota, Early Ohio:									
1933–34	1.20	1.17				1.61	1.34		1.33
1935–36	.90	1.25	1.25			1.42	1.58	1.69	1.35
Minnesota, Irish Cobbler:									
1933–34	1.25			1.61			1.51	1.07	1.36
1935–36	.85	1.23	1.17			1.32	1.41		1.20
Nebraska, Bliss Triumph:									
1935–36		1.47	1.40	1.38	1.48	1.60	1.96		1.55

Considerable variations in market price, are caused by variety and origin. For example, the Idaho Russet Burbank has brought much higher prices in New York than the other varieties. Long Island Green Mountain potatoes have usually brought a moderate premium over Maine Green Mountain (table 21). The New York quotations on Green Mountain stock show that receipts from the south side of Long Island often bring a premium over receipts from the north side. In 1935–36 this premium averaged about 7 percent and in 1936–37 about 8 percent. These higher prices may be due in part to a slightly brighter appearance which some dealers claim is characteristic of the south-side stock. The Green Mountain variety from Maine, when sold in bulk in New York, usually brings slightly less on a 100-pound basis than sacked stock. The difference is frequently about 10 cents.

Potatoes in small sacks usually bring slightly more per 100 pounds than the same variety in 100-pound sacks. A comparison month by month of Idaho Russet Burbank potatoes in 10-pound sacks in New York as compared with 100-pound sacks shows only a slight margin in favor of the smaller packages. Idaho baking potatoes of the Russet Burbank variety packed in 50-pound boxes sold in New York at almost double the price of U. S. No. 1 sacked stock on a 100-pound basis (table 21).

In Chicago, the two highest priced varieties have been the Russet Burbank from Idaho, and the Red McClure from Colorado. These two varieties have often sold in Chicago at about the same price. Prices for Idaho Russet Burbank have been considerably higher in New York than in Chicago (tables 21 and 22). The Chicago prices

are on carlot sales whereas the New York prices are on less-than-carlot quantities. The additional cost of transportation to New York plus a small amount for the difference in type of sale, roughly accounts for the price differential on this variety between the two cities in most instances.

A comparison of prices for certain varieties in New York and Chicago with f. o. b. prices at leading shipping points indicates that in most months there was only a small margin between the city price minus transportation charges and the price at shipping point. It is of course difficult to make these comparisons accurately because of the range in market-news prices and variations in grade, condition, and other factors.

Most of the late-crop potato supplies in cities on the Pacific coast are from nearby sources. Prices in the far-western markets are often considerably different from those in middle-western markets. The approximate monthly range in prices of the Russet Burbank (Netted Gem) from Oregon, and the long white type from the delta district of California are shown in table 23 for three seasons.

TABLE 23.—*Approximate range in wholesale prices of potatoes per 100 pounds, sacked, l. c. l., specified origin, variety, and months, San Francisco, 1934–36* [1]

Origin, variety, and season	September	October	November	December	January	February
Delta district, Calif., long white:						
1934–35	$1.15–$1.25	$1.10–$1.30	$1.15–$1.35	$1.15–$1.25	$1.15–$1.50	$1.00–$1.30
1935–36	1.00– 1.20	1.00– 1.20	1.60– 2.00	1.30– 1.75	1.25– 1.75	1.65– 1.85
1936	2.00– 2.25	2.00– 2.25	2.00– 2.60	2.30– 2.60	----------	----------
Klamath district, Oreg., Russet Burbank (Netted Gem):						
1934–35	1.25– 1.60	1.20– 1.50	1.20– 1.35	1.25– 1.35	1.15– 1.40	1.25– 1.40
1935–36	1.25– 1.35	1.15– 1.70	1.70– 2.25	1.80– 2.10	1.65– 2.10	1.50– 1.85
1936	2.00– 2.60	2.00– 2.20	2.20– 2.40	2.30– 2.65	----------	----------

[1] Compiled from Federal-State market news report issued May 1937, showing prices for Wednesday of each week.

JUDGING THE MARKET

In deciding when to sell, growers and shippers are concerned with such questions as the relation of the size of the United States crop to current prices; geographic location of the supply; the trend of consumer incomes and the general price level; and, as the season progresses, the available stocks, and prospects for the production of the commercial early crop. Prices that individual growers and shippers may expect to receive vary of course with variety, grade, size, and method of sale.

The demand for potatoes is relatively inelastic. Buyers do not markedly increase or decrease the quantities bought in response to small price changes. An increase in production usually results in a more than proportionate decrease in price and a decrease in production usually causes a more than proportionate price increase. For the 10 crops 1927–36, production in 30 late-crop States averaged about 302,000,000 bushels. Yearly variations from this figure averaged about 7 percent compared with 29 percent as a similarly computed figure for deflated farm price in the 30 States. For each year, and as an average for the period, price changes were much greater proportionately than changes in production.

Probable shrinkage losses and labor considerations are important factors in determining whether to sell at harvest time or later in the season. Shrinkage losses may considerably offset price increases during the season. There is a normal tendency for prices of late-crop potatoes to increase somewhat during the marketing season because of costs of storage and shrinkage losses. By selling in October growers can avoid shrinkage, storage costs, and risks that are entailed in holding until winter or spring. In only 4 of the 10 seasons 1927–28 to 1936–37 in New York City, was the average price in March as much as 20 cents per 100 pounds above the average in October. In only one season was the March price materially below the October price. The trend during the season depends on whether the fall prices are low or high in relation to supply and the prevailing level of consumer demand; and conditions as they develop through the season.

In years when the late-crop production was 2.5 bushels per capita or less the price usually increased considerably from October to March. There are exceptions to this rule, as in 1929–30 in New York and 1930–31 in Chicago (table 24). In both instances the prices declined from October to March even though production was only 2.2 bushels per capita. The downward trend in the general price level in these years was a factor influencing the trend in prices for potatoes. In years when a small proportion of the crop was produced in Maine, New York, and Pennsylvania, there was a tendency for New York prices to be somewhat higher relative to Chicago prices than in years when a larger part of the crop was grown in the East.

TABLE 24.—*United States per-capita production of potatoes in 30 late-crop States, production in Maine, New York, and Pennsylvania as a percentage of the total late crop, and seasonal wholesale price trend, New York and Chicago, 1927–28 to 1936–37* [1]

Season	Per-capita production of potatoes in 30 late-crop States [2]	Production in Maine, New York, Pennsylvania as percentage of total late crop	Wholesale price per 100 pounds, l. c. l., New York			Wholesale price per 100 pounds, carlots, Chicago		
			October	Relation to October price		October	Relation to October price	
				January	March		January	March
	Bushels	*Percent*	*Dollars*	*Percent*	*Percent*	*Dollars*	*Percent*	*Percent*
1927–28	2.5	28	2.26	100	131	1.53	99	142
1928–29	2.8	28	1.37	111	99	.91	110	93
1929–30	2.2	35	3.14	100	88	2.40	107	102
1930–31	2.2	33	1.91	112	105	1.77	92	90
1931–32	2.5	35	.96	118	119	.90	109	110
1932–33	2.5	31	.94	121	119	.68	129	137
1933–34	2.3	33	1.84	112	127	1.31	143	131
1934–35	2.7	38	.92	108	95	1.20	88	58
1935–36	2.5	29	1.18	145	152	1.09	124	142
1936–37	2.2	35	2.00	136	127	2.07	134	129

[1] Prices of Russet Burbank variety not included.
[2] Production in 30 late-crop States divided by United States population.

A graphic comparison of the relation of price and supply factors in specific years may be helpful to growers and handlers in judging the course of the market. Production in 30 late-crop States for each of the 10 years 1927–36, October to April prices in New York and

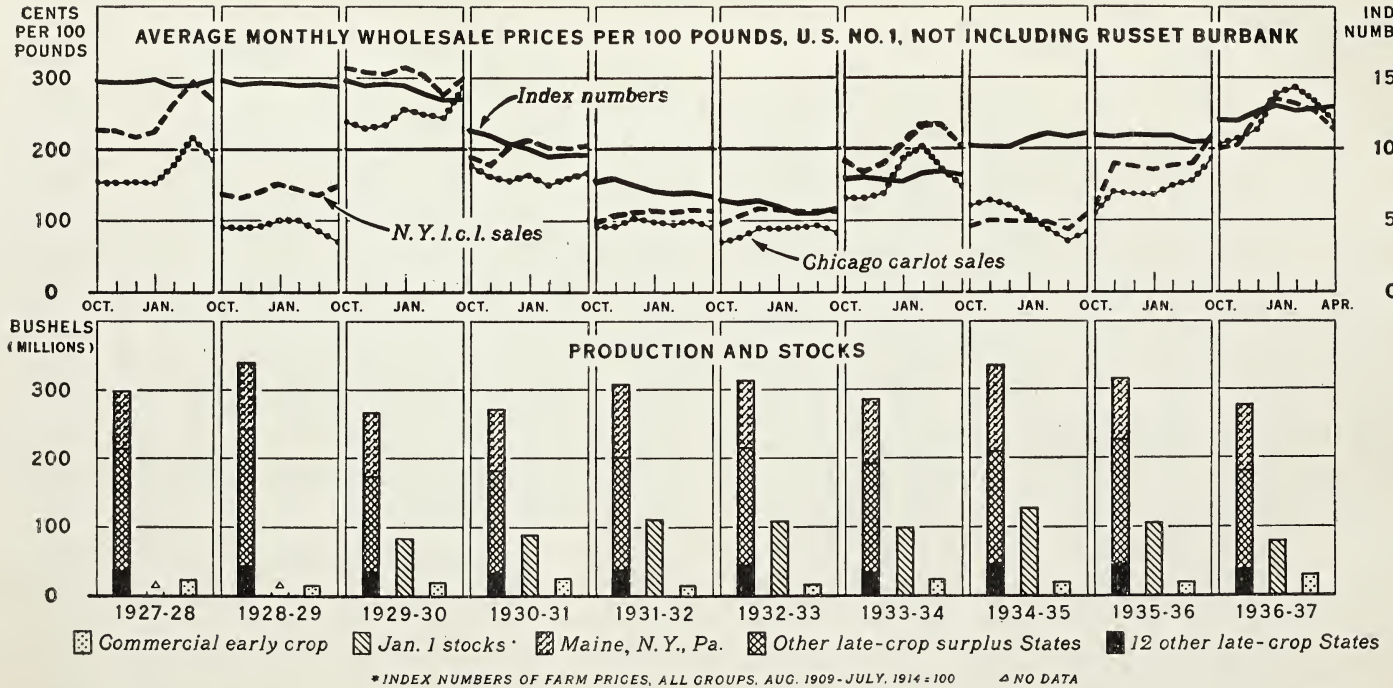

FIGURE 17.—Factors that influence late-crop potato prices include size of the crop, geographic location of supplies, general price level, January stocks, and commercial early-crop production.

Chicago, and the level of prices of all farm products are shown in figure 17. Prices are exclusive of Russet Burbank which sells at a premium over most other varieties. Production is indicated separately for the group of 3 eastern surplus-producing States, other surplus late-crop States, and 12 other late-crop States. January 1 stocks held by growers and local dealers and buyers are also shown. The New York or Chicago price, minus transportation costs and a relatively small margin for selling or handling, is usually approximately equal to the price at shipping point (fig. 17).

As an example of how this graph may be used in comparing price and supply conditions in various years, consider the three seasons 1930–31, 1934–35, and 1935–36. In each the prices of all groups of farm products as indicated on the graph averaged slightly above the 1909–14 level. The small 1930 late-crop production of about 272,000,000 bushels resulted in an average Chicago price near $1.60 per 100 pounds. The New York price was considerably higher. In 1934, with a late crop of about 337,000,000 bushels, prices were lower and averaged near $1 per 100 pounds in both New York and Chicago. The relatively heavy production in the three Eastern surplus States tended to hold the New York price at about the same level as the Chicago price. In 1935, production was considerably less than in 1934. The crop in the East was much shorter than in 1934 which tended to hold the price in New York above the price in Chicago. Fall prices were near, or slightly above, those of the previous fall but rose sharply during the season partly in response to lower stocks, and averaged considerably higher than in 1934–35 (fig. 17). Purchasing power, as measured by industrial wages, was also moderately higher in 1935–36 than in 1934–35.

SUMMARY

There were notable increases in the production of late-crop potatoes in the period 1932–36 as compared with 1922–26 in Maine and Idaho, and decreases in Midwestern surplus States. During this period the percentage increase in the production of potatoes in 30 late-crop States was less than the increase in the population of the United States. Production in 30 late-crop States usually comprises 80 to 85 percent of the total United States crop, and averaged slightly more than 300,000,000 bushels in 1932–36. On the average, changes in size of the late crop from year to year have been attributable more to variations from the average acreage than to variations from the average yield per acre.

Carlot and boat shipments average about 30 percent of production in 30 late-crop States. The quantity available for market by motortruck or in small lots is usually about 35 percent, so that slightly less than two-thirds of the production is usually available for sale. The remainder is saved for food on farms, or for seed in the locality where grown, or is unfit for food or seed.

Movement by motortruck has increased. A large part of this movement is for distances of less than 125 miles. Sales for cash at the farm have increased with the use of the truck.

Bruises and cuts are among the most common defects in late-crop potatoes. Much of the injury of this type could be prevented by careful handling. A large part of the late crop is packed in 100-pound sacks. Developments in marketing late-crop potatoes during recent

years include a moderate increase in the use of small sacks, and in the use of brushing and washing machines in cleaning potatoes for market.

Laws relating to grading and marking have been enacted in many States. Government agencies are taking vigorous steps to eliminate the practice of misbranding interstate shipments of potatoes. About 58 percent of the carlot shipments of potatoes from 30 late-crop States were inspected at shipping point in 1935–36 by Federal-State inspectors.

A number of leading commercial producing areas are at great distances from the principal markets and transportation is a large item in marketing costs.

Methods of sale in producing districts vary. A common method is for growers to sell at the warehouse of a country dealer or shipper on the basis of a certain grade. The shipper grades and sacks the potatoes. Carlot sales to city dealers are on either a delivered or a f. o. b. shipping-point basis.

Most of the late crop is harvested in September and October and is marketed from then until the following June. Market competition of early-crop potatoes with the late crop is not very significant until April. In May, shipments of early-crop potatoes usually increase until they exceed late-crop shipments in the daily movement.

Over half the Maine shipments go to markets in New England and New York. Potatoes from Idaho are widely distributed throughout the United States. The area of market distribution for late potatoes from each of the other important producing States is more restricted.

In the city markets, as in producing areas, various methods are used in selling and distributing the crop. In the large markets, a common channel of distribution is from carlot receiver to jobber to retailer. In many instances, particularly in the medium-sized and smaller markets, the dealers buy in carlots and sell to the retailers. Chain stores buy large quantities direct from shippers. Truckers who buy from growers or country dealers, sell direct to retailers and consumers as well as through wholesalers.

Prices for late-crop potatoes are influenced largely by the size of the crop and the general price level. Other price-influencing factors include location of supply, variety, grade, pack, method of sale, and the period in the season when sold. In deciding when to sell, growers and shippers are also influenced by probable shrinkage losses and labor considerations.

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